Service Manual

DUO Series

DUO Outdoor Models
DUO OU7 (9+9)
DUO OU7 (9+12)
DUO OU7 (12+12)



REFRIGERANT	
R410A	HEAT PUMP COOLING ONLY

FEBRUARY - 2006

CONTENT

LIST OF EFFECTIVE PAGES

Note: Changes in the pages are indicated by a “Revision#” in the footer of each effected page (when none indicates no changes in the relevant page). All pages in the following list represent effected/ non effected pages divided by chapters.

Dates of issue for original and changed pages are:

Original .... 0 ....March 2005

Total number of pages in this publication is 59 consisting of the following:

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• Zero in this column indicates an original page.

*Due to constant improvements please note that the data on this service manual can be modified with out notice.
**Photos are not contractual

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1. INTRODUCTION

1.1 General

The DUO multi split R410A outdoor unit series, comprise the following ST (cooling only) and RC (heat pump) models:

- **Cooling Only** OU7 (9+9) ST, OU7 (9+12) ST, OU7 (12+12) ST
- **Heat Pump** OU7 (9+9) RC, OU7 (9+12) RC, OU7 (12+12) RC

1.2 Main Features

- R410A refrigerant
- Built in Deicing Controller.
- High COP
- Outdoor coil with hydrophilic louver fins for RC units.
- Metal sheets protected by anti - corrosion paint work allowing long life resistance.
- Compressor mounted in a soundproofed compartment
- Easy installation and service.

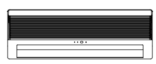
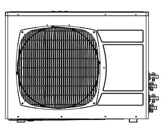
1.3 Tubing Connections

Flare type interconnecting tubing to be produced on site.
For further details please refer to APPENDIX A on this manual, and to the relevant indoor service Manual,

1.4 Inbox Documentation

Each indoor unit is supplied with its own installation and operation manuals, an additional instillation guide is provided in the DUO outdoor package.

1.5 Matching Table

OUTDOOR UNITS			INDOOR UNITS			
						
	MODEL	REFRIGERANT	WNG9	WNG12	ALPHA 9	ALPHA 12
	DUO 9+9 ST/RC	R410A	√		√	
	DUO 9+12 ST/RC	R410A	√	√	√	√
	DUO 12+12 ST/RC	R410A		√		√

2. PRODUCT DATA SHEET

2.1 WNG 9+9 / OU7- 0909

Model Indoor Unit				**WNG 9+9**		
Model Outdoor Unit				OU7-0909		
Installation Method				Wall Mounted		
Characteristics			**Units**	**Cooling**		**Heating**
Capacity(1)			Btu/hr	19520		18315
			kW	5.72		5.37
Power Input(1)			kW	1.78		1.67
COP(1)			W/W	3.2		3.2
Power Supply			V/Ph/Hz	230/1/50+/-10%		
Rated Current			A	7.7		7.3
Starting Current			A	18.7 / 18.7		
Circuit Breaker Rating			A	16		
INDOOR	Fan Type & Quantity			Crossflow*1		
INDOOR	Airflow(2)	H/M/L	m^3/hr	450	380	330
INDOOR	External Static Pressure	Min-Max	Pa	N/A		
INDOOR	Sound Power Level(3)	H/M/L	dB (A)	44	46	49
INDOOR	Sound Pressure Level (4)	H/M/L	dB (A)	28	31	35
INDOOR	Moisture Removal		L/hr	2*0.9		
INDOOR	Condensate Drain Tube I.D.		mm	16		
INDOOR	Dimensions	W/H/D	mm	810*190*285		
INDOOR	Weight		kg	11		
INDOOR	Package Dimensions	W/H/D	mm	945*395*655		
INDOOR	Units per Pallet		Units	32		
INDOOR	Stacking Height		Units	8		
OUTDOOR	Refrigerant Control			Capillary tube		
OUTDOOR	Compressor Type, Model			Rotary		
OUTDOOR	Fan Type & Quantity			Axial*1		
OUTDOOR	Fan Speeds	H/L	RPM	850		
OUTDOOR	Airflow	H/L	m^3/hr	3100		
OUTDOOR	Sound Power Level	H/L	dB (A)	66.8		
OUTDOOR	Sound Pressure Level (4)	H/L	dB (A)	59		
OUTDOOR	Dimensions	W/H/D	mm	900*680*340		
OUTDOOR	Weight		kg	72		
OUTDOOR	Package Dimensions	W/H/D	mm	985*730*406		
OUTDOOR	Packaged Weight		kg	74		
OUTDOOR	Units per Pallet		Units	6		
OUTDOOR	Stacking Height		Units	2		
OUTDOOR	Refrigerant Type			R410A		
OUTDOOR	Refrigerant Charge ST/ RC outdoor		gr	750+750 / 730+730		
OUTDOOR	Connections Between Units	Liquid Line	In	2*6.35(1/4")		
OUTDOOR	Connections Between Units	Suction Line	In	2*9.53(3/8")		
OUTDOOR	Connections Between Units	Max. Tubing Length	m	15		
OUTDOOR	Connections Between Units	Max. Height Difference	m	7		
Operation Control Type				LC D REMOTE CONTROL		
Heating Elements			kW	NO		
Others						

1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
(2) Airflow in ducted units; at nominal external static pressure.
(3) Sound power in ducted units is measured at air discharge.
(4) Sound pressure level measured at 1 meter distance from unit.

CONTENT

2.1.1 WNG 9+12 / OU7- 0912

	Characteristics		Units	Cooling		Heating
	Model Indoor Unit			**WNG 9+12**		
	Model Outdoor Unit			OU7-0912		
	Installation Method			Wall Mounted		
	Characteristics		**Units**	**Cooling**		**Heating**
	Capacity[1]		Btu/hr	20230		20910
			kW	5.93		6.13
	Power Input[1]		kW	2.07		1.97
	COP[1]		W/W	2.86		3.1
	Power Supply		V/Ph/Hz	230/1/50		
	Rated Current		A	9.1		8.7
	Starting Current		A	18.7 / 24.0		
	Circuit Breaker Rating		A	16		
INDOOR	Fan Type & Quantity			Crossflow*1		
	Airflow[2]	H/M/L	m^3/hr	450+635	380+550	330+450
	External Static Pressure	Min-Max	Pa	N/A		
	Sound Power Level[3]	H/M/L	dB (A)	44+49	46+53	49+56
	Sound Pressure Level [4]	H/M/L	dB (A)	28+35	31+39	35+43
	Moisture Removal		L/hr	0.9+1.3		
	Condensate Drain Tube I.D.		mm	16		
	Dimensions	W/H/D	mm	810*190*285		
	Weight		kg	11+11.5		
	Package Dimensions	W/H/D	mm	945*395*655		
	Units per Pallet		Units	32		
	Stacking Height		Units	8		
OUTDOOR	Refrigerant Control			Capillary		
	Compressor Type, Model			Rotary		
	Fan Type & Quantity			Axial*1		
	Fan Speeds	H/L	RPM	850		
	Airflow	H/L	m^3/hr	3100		
	Sound Power Level	H/L	dB (A)	66.8		
	Sound Pressure Level [4]	H/L	dB (A)	59		
	Dimensions	W/H/D	mm	900*680*340		
	Weight		kg	74		
	Package Dimensions	W/H/D	mm	985*730*406		
	Packaged Weight		kg	76		
	Units per Pallet		Units	6		
	Stacking Height		Units	2		
	Refrigerant Type			R410A		
	Refrigerant Charge ST/ RC outdoor		gr	830+670 / 830+670		
	Connections Between Units	Liquid Line	In	2*6.35(1/4")		
		Suction Line	In	2*9.53(3/8")		
		Max. Tubing Length	m	15		
		Max. Height Difference	m	7		
	Operation Control Type			LCD REMOTE CONTROL		
	Heating Elements		kW	NO		
	Others					

1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
(2) Airflow in ducted units; at nominal external static pressure.
(3) Sound power in ducted units is measured at air discharge.
(4) Sound pressure level measured at 1 meter distance from unit.

2.1.2 ALPHA 9+9 / OU7- 0909

	Characteristics		Units	Cooling		Heating
	Model Indoor Unit			**Alpha 9+9**		
	Model Outdoor Unit			OU7-0909		
	Installation Method			Wall Mounted		
	Characteristics		**Units**	**Cooling**		**Heating**
	Capacity(1)		Btu/hr	17400		17460
			kW	5.1		5.12
	Power Input(1)		kW	1.73		1.74
	COP(1)		W/W	2.95		2.9
	Power Supply		V/Ph/Hz	230/1/50		
	Rated Current		A	7.6		7.7
	Starting Current		A	18.7 / 18.7		
	Circuit Breaker Rating		A	16		
INDOOR	Fan Type & Quantity			Crossflow*1		
	Airflow(2)	H/M/L	m^3/hr	450		360
	External Static Pressure	Min-Max	Pa	N/A		
	Sound Power Level(3)	H/M/L	dB (A)	52		49
	Sound Pressure Level (4)	H/M/L	dB (A)	41		35
	Moisture Removal		L/hr	2*0.9		
	Condensate Drain Tube I.D.		mm	16		
	Dimensions	W/H/D	mm	680*250*180		
	Weight		kg	7		
	Package Dimensions	W/H/D	mm	740*310*250		
	Units per Pallet		Units	36		
	Stacking Height		Units	9		
OUTDOOR	Refrigerant Control			Capillary tube		
	Compressor Type, Model			Rotary		
	Fan Type & Quantity			Axial*1		
	Fan Speeds	H/L	RPM	850		
	Airflow	H/L	m^3/hr	3100		
	Sound Power Level	H/L	dB (A)	66.8		
	Sound Pressure Level (4)	H/L	dB (A)	59		
	Dimensions	W/H/D	mm	900*680*340		
	Weight		kg	72		
	Package Dimensions	W/H/D	mm	985*730*406		
	Packaged Weight		kg	74		
	Units per Pallet		Units	6		
	Stacking Height		Units	2		
	Refrigerant Type			R410A		
	Refrigerant Charge ST/ RC outdoor		gr	750+750 / 730+730		
	Connections Between Units	Liquid Line	In	2*6.35(1/4")		
		Suction Line	In	2*9.53(3/8")		
		Max. Tubing Length	m	15		
		Max. Height Difference	m	7		
	Operation Control Type			LC D REMOTE CONTROL		
	Heating Elements		kW	NO		
	Others					

1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
(2) Airflow in ducted units; at nominal external static pressure.
(3) Sound power in ducted units is measured at air discharge.
(4) Sound pressure level measured at 1 meter distance from unit.

2.1.3 ALPHA 9+12 / OU7- 0912

	Characteristics		Units	Cooling		Heating
	Model Indoor Unit			**ALPHA 9+12**		
	Model Outdoor Unit			OU7-0912		
	Installation Method			Wall Mounted		
	Characteristics		**Units**	**Cooling**		**Heating**
	Capacity(1)		Btu/hr	19815		21020
			kW	5.81		6.16
	Power Input(1)		kW	2.06		2.09
	COP(1)		W/W	2.82		2.93
	Power Supply		V/Ph/Hz	230/1/50+/-10%		
	Rated Current		A	9		9.2
	Starting Current		A	18.7 / 24.0		
	Circuit Breaker Rating		A	16		
INDOOR	Fan Type & Quantity			Crossflow *1		
INDOOR	Airflow(2)	H/M/L	m^3/hr	620+450		460+360
INDOOR	External Static Pressure	Min-Max	Pa	N/A		
INDOOR	Sound Power Level(3)	H/M/L	dB (A)	53+53		47+49
INDOOR	Sound Pressure Level (4)	H/M/L	dB (A)	40+41		33+35
INDOOR	Moisture Removal		L/hr	0.9+1.3		
INDOOR	Condensate Drain Tube I.D.		mm	16		
INDOOR	Dimensions	W/H/D	mm	680*250*180/840*250*180		
INDOOR	Weight		kg	7+8		
INDOOR	Package Dimensions	W/H/D	mm	900*310*250/740*310*250		
INDOOR	Units per Pallet		Units	36		
INDOOR	Stacking Height		Units	9		
OUTDOOR	Refrigerant Control			Capillary		
OUTDOOR	Compressor Type, Model			Rotary		
OUTDOOR	Fan Type & Quantity			Axial*1		
OUTDOOR	Fan Speeds	H/L	RPM	850		
OUTDOOR	Airflow	H/L	m^3/hr	3100		
OUTDOOR	Sound Power Level	H/L	dB (A)	66.8		
OUTDOOR	Sound Pressure Level (4)	H/L	dB (A)	59		
OUTDOOR	Dimensions	W/H/D	mm	900*680*340		
OUTDOOR	Weight		kg	74		
OUTDOOR	Package Dimensions	W/H/D	mm	985*730*406		
OUTDOOR	Packaged Weight		kg	76		
OUTDOOR	Units per Pallet		Units	6		
OUTDOOR	Stacking Height		Units	2		
OUTDOOR	Refrigerant Type			R410A		
OUTDOOR	Refrigerant Charge ST/ RC outdoor		gr	830+670 / 830+670		
OUTDOOR	Connections Between Units	Liquid Line	In	2*6.35(1/4")		
OUTDOOR	Connections Between Units	Suction Line	In	2*9.53(3/8")		
OUTDOOR	Connections Between Units	Max. Tubing Length	m	15		
OUTDOOR	Connections Between Units	Max. Height Difference	m	7		
	Operation Control Type			LCD REMOTE CONTROL		
	Heating Elements		kW	NO		
	Others					

1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
(2) Airflow in ducted units; at nominal external static pressure.
(3) Sound power in ducted units is measured at air discharge.
(4) Sound pressure level measured at 1 meter distance from unit.

2.1.4 WNG 12+12 / OU7-1212

Model Indoor Unit				**WNG 12*12**		
Model Outdoor Unit				OU7-1212		
Installation Method				Wall Mounted		
Characteristics			**Units**	**Cooling**		**Heating**
Capacity(1)			Btu/hr	23884		25000
			kW	7		7.33
Power Input(1)			kW	2.5		2.3
COP(1)			W/W	2.8		3.2
Energy Efficiency Class						
Power Supply			V/Ph/Hz	230/1/50+/-10%		
Rated Current			A			
Starting Current			A	24 / 24		
Circuit Breaker Rating			A	16		
INDOOR	Fan Type & Quantity			Crossflow*1		
INDOOR	Fan Speed	H/M/L	RPM			
INDOOR	Airflow(2)	H/M/L	m^3/hr	635+635	550+550	450+450
INDOOR	External Static Pressure	Min-Max	Pa	N/A		
INDOOR	Sound Power Level(3)	H/M/L	dB (A)	56+56	53+53	49+49
INDOOR	Sound Pressure Level (4)	H/M/L	dB (A)	43+43	39+39	35+35
INDOOR	Moisture Removal		L/hr	1.3+1.3		
INDOOR	Condensate Drain Tube I.D.		mm	16		
INDOOR	Dimensions	W/H/D	mm	810*190*285		
INDOOR	Weight		kg	11.5+11.5		
INDOOR	Package Dimensions	W/H/D	mm	945*395*655		
INDOOR	Packaged Weight		kg	N/A		
INDOOR	Units per Pallet		Units	32		
INDOOR	Stacking Height		Units	8		
OUTDOOR	Refrigerant Control			Capillary		
OUTDOOR	Compressor Type, Model			Rotary		
OUTDOOR	Fan Type & Quantity			Axial*1		
OUTDOOR	Fan Speeds	H/L	RPM	850		
OUTDOOR	Airflow	H/L	m^3/hr	3100		3100
OUTDOOR	Sound Power Level	H/L	dB (A)	66.8		
OUTDOOR	Sound Pressure Level (4)	H/L	dB (A)	59		
OUTDOOR	Dimensions	W/H/D	mm	900*680*340		
OUTDOOR	Weight		kg	74		
OUTDOOR	Package Dimensions	W/H/D	mm	985*730*406		
OUTDOOR	Packaged Weight		kg	76		
OUTDOOR	Units per Pallet		Units	6		
OUTDOOR	Stacking Height		Units	2		
OUTDOOR	Refrigerant Type			R410A		
OUTDOOR	Refrigerant Charge		GR	880+880		
OUTDOOR						
OUTDOOR	Connections Between Units	Liquid Line	In	2*6.35(1/4")		
OUTDOOR	Connections Between Units	Suction Line	In	2*9.53(3/8")		
OUTDOOR	Connections Between Units	Max. Tubing Length	m	15		
OUTDOOR	Connections Between Units	Max. Height Difference	m	7		
Operation Control Type				LCD REMOTE CONTROL		
Heating Elements			kW			
Others						

1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
(2) Airflow in ducted units; at nominal external static pressure.
(3) Sound power in ducted units is measured at air discharge.
(4) Sound pressure level measured at 1 meter distance from unit.

2.1.5 ALPHA 12+12 / OU7-1212

Characteristics	Units	Cooling	Heating
Model Indoor Unit		**ALPHA 12*12**	
Model Outdoor Unit		OU7-1212	
Installation Method		Wall Mounted	
Characteristics	**Units**	**Cooling**	**Heating**
Capacity(1)	Btu/hr	23884	25000
	kW	7	7.33
Power Input(1)	kW	2.5	2.50
COP(1)	W/W	2.8	2.93
Energy Efficiency Class			
Power Supply	V/Ph/Hz	230/1/50+/-10%	
Rated Current	A		
Starting Current	A	24 / 24	
Circuit Breaker Rating	A	16	

INDOOR		Units			
Fan Type & Quantity			Crossflow*1		
Fan Speed	H/M/L	RPM			
Airflow(2)	H/M/L	m^3/hr	600+600		450+450
External Static Pressure	Min-Max	Pa	N/A		
Sound Power Level(3)	H/M/L	dB (A)	54+54		47+47
Sound Pressure Level (4)	H/M/L	dB (A)	42+42		36+36
Moisture Removal		L/hr	1.3+1.3		
Condensate Drain Tube I.D.		mm	16		
Dimensions	W/H/D	mm	840*250*180		
Weight		kg	8+8		
Package Dimensions	W/H/D	mm	930*325*265		
Packaged Weight		kg	N/A		
Units per Pallet		Units	36		
Stacking Height		Units	9		

OUTDOOR		Units		
Refrigerant Control			Capillary	
Compressor Type, Model			Rotary	
Fan Type & Quantity			Axial*1	
Fan Speeds	H/L	RPM	850	
Airflow	H/L	m^3/hr	3100	3100
Sound Power Level	H/L	dB (A)	66.8	
Sound Pressure Level (4)	H/L	dB (A)	59	
Dimensions	W/H/D	mm	900*680*340	
Weight		kg	74	
Package Dimensions	W/H/D	mm	985*730*406	
Packaged Weight		kg	76	
Units per Pallet		Units	6	
Stacking Height		Units	2	
Refrigerant Type			R410A	
Refrigerant Charge		GR	880+880	
Connections Between Units	Liquid Line	In	2*6.35(1/4")	
	Suction Line	In	2*9.53(3/8")	
	Max. Tubing Length	m	15	
	Max. Height Difference	m	7	

	Units	
Operation Control Type		LCD REMOTE CONTROL
Heating Elements	kW	
Others		

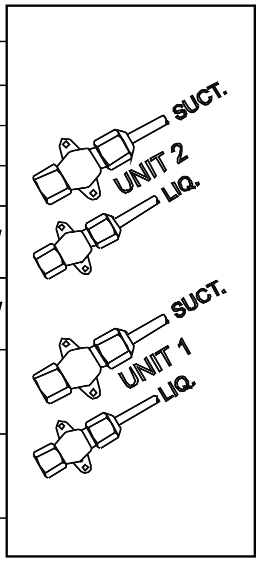
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(2) Airflow in ducted units; at nominal external static pressure.
(3) Sound power in ducted units is measured at air discharge.
(4) Sound pressure level measured at 1 meter distance from unit.

2.2 Capacity & Additional Charge Table

2.2.1 DUO 9+9 RC Additional Refrigerant Charge Lable (as show on unit).

CAPACITY AND ADDITIONAL CHARGE FOR VARIOUS APPLICATIONS

INDOOR		UNIT 1	UNIT 2	UNIT 1	UNIT 2
		ALPHA 9	ALPHA 9	WNG 9	WNG 9
		AME 20	AME 20	NXE 20	NXE 20
		WAF 9	WAF 9	FLO 9	FLO 9
COOLING CAPACITY*		17400 Btu/h, 5100W		19520 Btu/h, 5720W	
HEATING CAPACITY*		17460 Btu/h, 5120W		18315 Btu/h, 5370W	
ADDITIONAL CHARGE (gr)	Up to 7.5m	0	0	90	90
	7.5m-15m	100	100	190	190



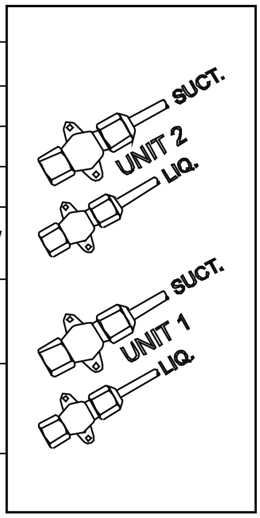
* For two units operating simultaneously.

REFRIGERANT **R410A** Cat.No.433943/01

2.2.2 DUO 9+9 ST Additional Refrigerant Charge Lable (as show on unit).

CAPACITY AND ADDITIONAL CHARGE FOR VARIOUS APPLICATIONS

INDOOR		UNIT 1	UNIT 2	UNIT 1	UNIT 2
		ALPHA 9	ALPHA 9	WNG 9	WNG 9
		AME 20	AME 20	NXE 20	NXE 20
		WAF 9	WAF 9	FLO 9	FLO 9
COOLING CAPACITY*		17400 Btu/h, 5100W		19520 Btu/h, 5720W	
ADDITIONAL CHARGE (gr)					
	7.5m-15m	100	100	100	100



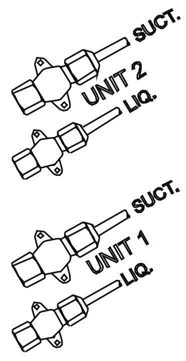
* For two units operating simultaneously.

REFRIGERANT **R410A** Cat.No.433945/01

2.2.3 DUO 9+12 RC Additional Refrigerant Charge Lable (as show on unit).

CAPACITY AND ADDITIONAL CHARGE FOR VARIOUS APPLICATIONS

INDOOR		UNIT 1	UNIT 2	UNIT 1	UNIT 2
		ALPHA 12	ALPHA 9	WNG 12	WNG 9
		AME 30	AME 20	NXE 30	NXE 20
		WAF 12	WAF 9	FLO 12	FLO 9
COOLING CAPACITY*		19815 Btu/h, 5810W		20230 Btu/h, 5930W	
HEATING CAPACITY*		21020 Btu/h, 6160W		20910 Btu/h, 6130W	
ADDITIONAL CHARGE (gr)	Up to 7.5m	0	0	90	80
	7.5m-15m	100	100	190	180



* For two units operating simultaneously.

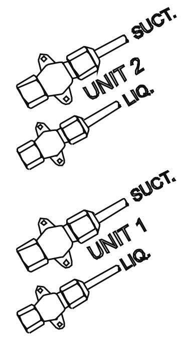
REFRIGERANT **R410A**

Cat.No.433944/01

2.2.4 DUO 9+12 ST Additional Refrigerant Charge Lable (as show on unit).

CAPACITY AND ADDITIONAL CHARGE FOR VARIOUS APPLICATIONS

INDOOR		UNIT 1	UNIT 2	UNIT 1	UNIT 2
		ALPHA 12	ALPHA 9	WNG 12	WNG 9
		AME 30	AME 20	NXE 30	NXE 20
		WAF 12	WAF 9	FLO 12	FLO 9
COOLING CAPACITY*		19815 Btu/h, 5810W		20230 Btu/h, 5930W	
ADDITIONAL CHARGE (gr)	Up to 7.5m	0	0	90	80
	7.5m-15m	100	100	190	180



* For two units operating simultaneously.

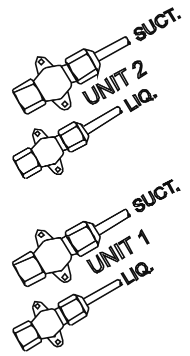
REFRIGERANT **R410A**

Cat.No.433946/01

2.2.5 DUO 12+12 RC Additional Refrigerant Charge Lable (as show on unit).

CAPACITY AND ADDITIONAL CHARGE FOR VARIOUS APPLICATIONS

INDOOR		UNIT 1	UNIT 2	UNIT 1	UNIT 2
		ALPHA 12	ALPHA 12	WNG 12	WNG 12
		AME 30	AME 30	NXE 30	NXE 30
		WAF 12	WAF 12	FLO 12	FLO 12
COOLING CAPACITY*		23884 Btu/h, 7000W		23884 Btu/h, 7000W	
HEATING CAPACITY*		25000 Btu/h, 7330W		25000 Btu/h, 7330W	
ADDITIONAL CHARGE (gr)	Up to 7.5m	0	0	0	0
	7.5m-15m	120	120	120	120



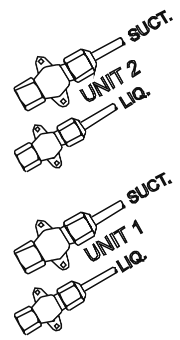
* For two units operating simultaneously.

REFRIGERANT **R410A** **Cat. No. 433994/01**

2.2.6 DUO 12+12 ST Additional Refrigerant Charge Lable (as show on unit).

CAPACITY AND ADDITIONAL CHARGE FOR VARIOUS APPLICATIONS

INDOOR		UNIT 1	UNIT 2	UNIT 1	UNIT 2
		ALPHA 12	ALPHA 12	WNG 12	WNG 12
		AME 30	AME 30	NXE 30	NXE 30
		WAF 12	WAF 12	FLO 12	FLO 12
COOLING CAPACITY*		23884 Btu/h, 7000W		23884 Btu/h, 7000W	
ADDITIONAL CHARGE (gr)	Up to 7.5m	0	0	0	0
	7.5m-15m	120	120	120	120



* For two units operating simultaneously.

REFRIGERANT **R410A** **Cat. No. 433995/01**

3. RATING CONDITIONS

Standard conditions in accordance with ISO 5151, ISO 13253 (for ducted units) and EN 14511.

Cooling:
Indoor: 27°C DB 19°C WB
Outdoor: 35°C DB

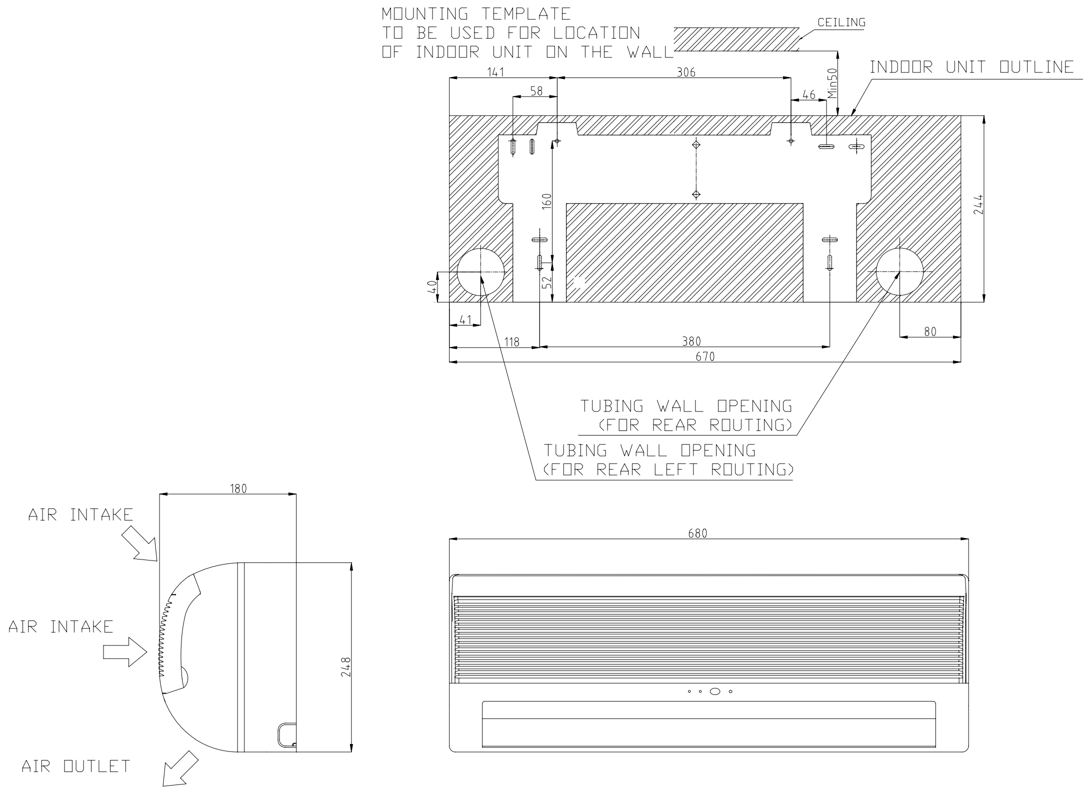
Heating:
Indoor: 20°C DB
Outdoor: 7°C DB 6°C WB

3.1 Operating Limits

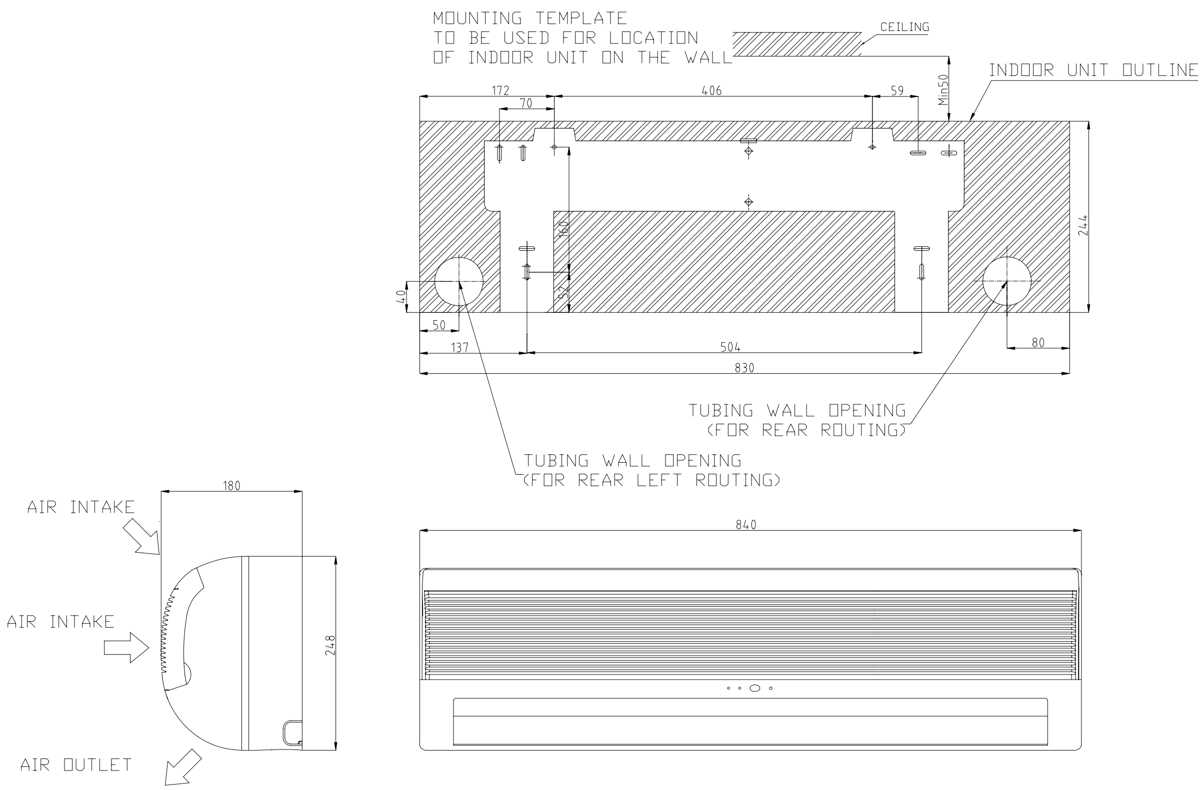
		Indoor	Outdoor
Cooling	Upper limit	32°C DB 23°C WB	46°C DB
	Lower limit	21°C DB 15°C WB	21°C DB
Heating	Upper limit	27°C DB	24°C DB 18°C WB
	Lower limit	20°C DB	-9°C DB -10°C WB
Voltage	1PH	198 – 264 V	
	3PH	360 – 440 V	

4. OUTLINE DIMENSIONS

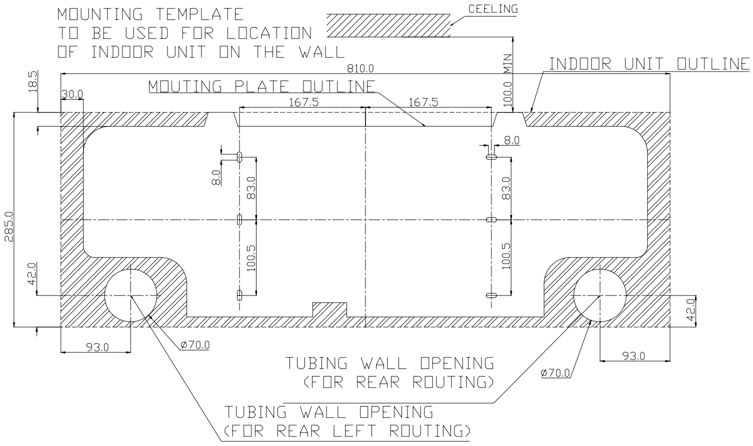
4.1 Indoor Unit: Alpha 9

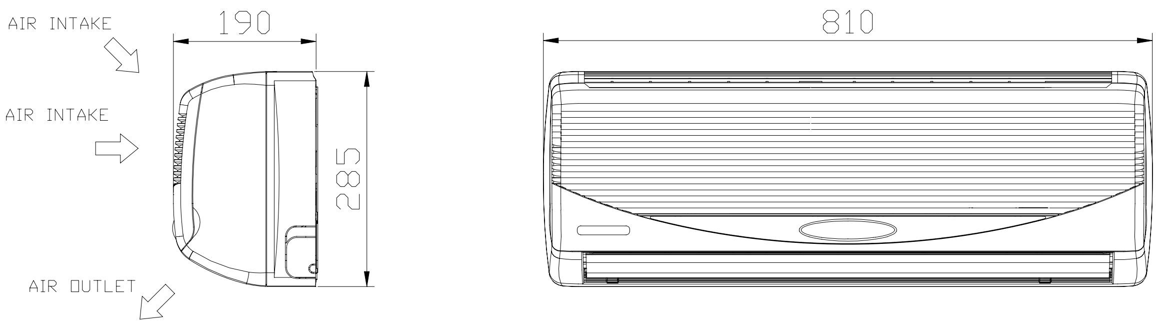


4.2 Indoor Unit: Alpha 12

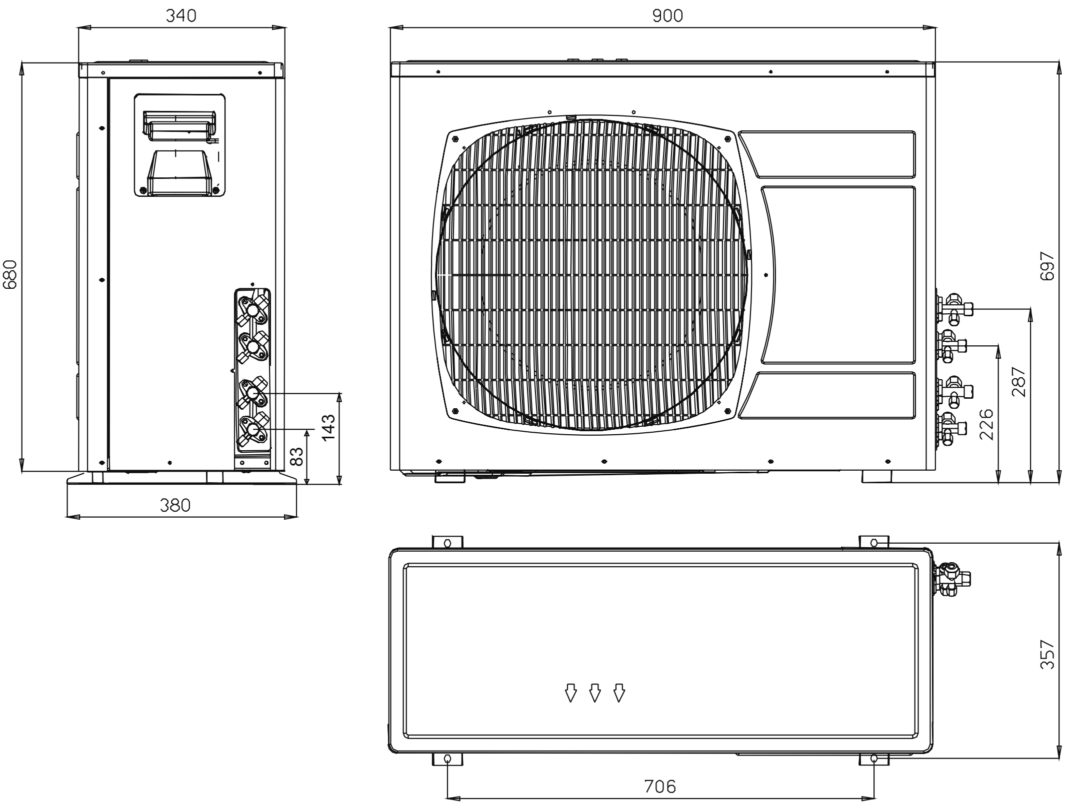


4.3 Indoor Unit: WNG 9, 12





4.2 Outdoor Unit: DUO OU7- (09+09), (09+12), (12+12)



CONTENT

5. PERFORMANCE DATA

5.1 DUO ALPHA (9+9):Room A + Room B

5.1.1 Cooling Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR DB OU COIL (°C)	DATA	ENTERING AIR WB/DB ID COIL (°C)				
		15/21	17/24	19/27	21/29	23/32
15(1)	TC	5.38	5.57	5.70	5.83	5.92
	SC	3.65	3.81	3.96	4.06	4.13
	PI	1.23	1.23	1.23	1.23	1.24
20(1)	TC	5.20	5.48	5.65	5.79	5.91
	SC	3.58	3.77	3.93	4.05	4.12
	PI	1.33	1.34	1.34	1.35	1.35
25	TC	4.92	5.31	5.59	5.75	5.90
	SC	3.49	3.70	3.90	4.02	4.09
	PI	1.44	1.45	1.46	1.47	1.48
30	TC	4.60	5.01	5.41	5.61	5.77
	SC	3.38	3.59	3.82	3.93	4.00
	PI	1.55	1.58	1.59	1.60	1.62
35	TC	4.26	4.62	**5.10**	5.36	5.61
	SC	3.21	3.44	**3.73**	3.84	3.91
	PI	1.67	1.70	**1.73**	1.74	1.75
40	TC	3.87	4.22	4.60	5.03	5.29
	SC	3.03	3.26	3.53	3.64	3.72
	PI	1.81	1.83	1.87	1.89	1.91
46	TC	3.36	3.68	4.04	4.47	4.81
	SC	2.79	2.99	3.22	3.33	3.40
	PI	1.97	2.00	2.05	2.08	2.10

LEGEND

TC – Total Cooling Capacity, kW
SC – Sensible Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

5.1.2 Heating Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

	ENTERING AIR DB ID COIL (°C)					
	15		20		25	
ENTERING AIR WB OU COIL (°C)	TH	PI	TH	PI	TH	PI
-10	2.69	1.39	2.59	1.48	2.48	1.56
-7	2.89	1.43	2.79	1.51	2.69	1.59
-2	3.07	1.44	2.97	1.53	2.87	1.62
2	3.74	1.51	3.58	1.61	3.43	1.71
6	5.27	1.63	**5.12**	**1.74**	4.94	1.85
10	5.73	1.72	5.58	1.84	5.43	1.96
15	6.20	1.79	6.04	1.93	5.89	2.05
20	6.53	1.84	6.37	2.00	6.20	2.16

* the above chart includes the weighted deicing infleuence.

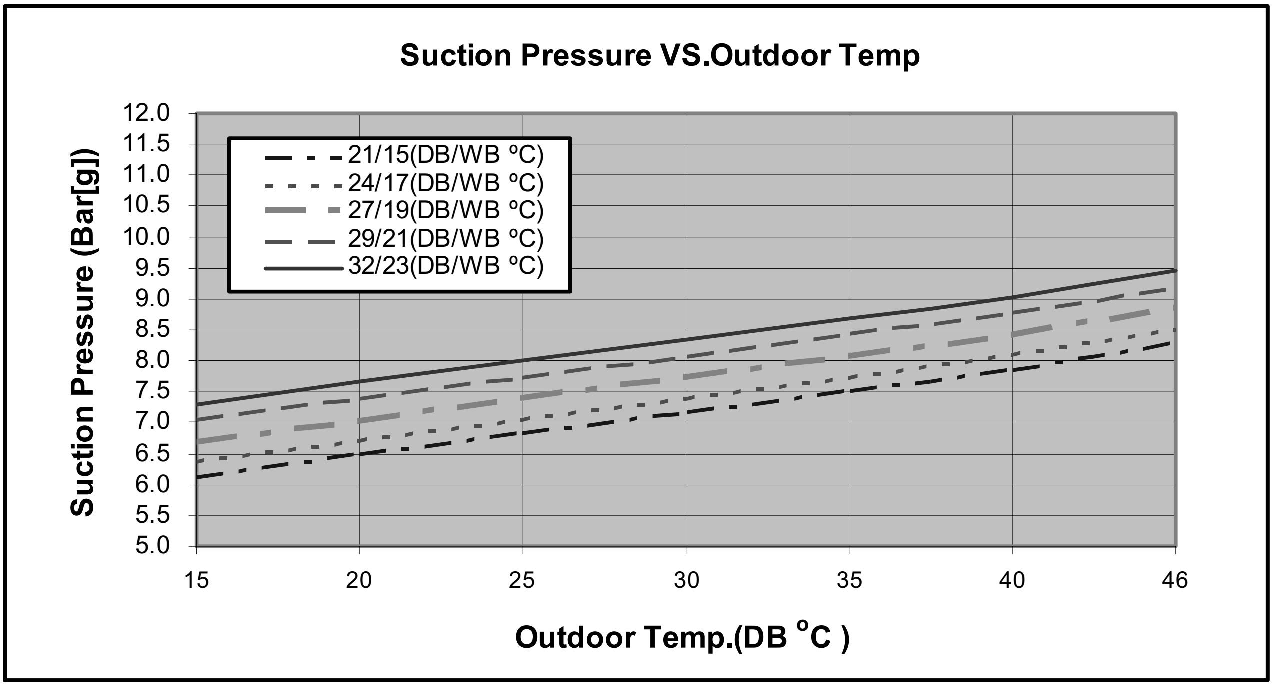
LEGEND

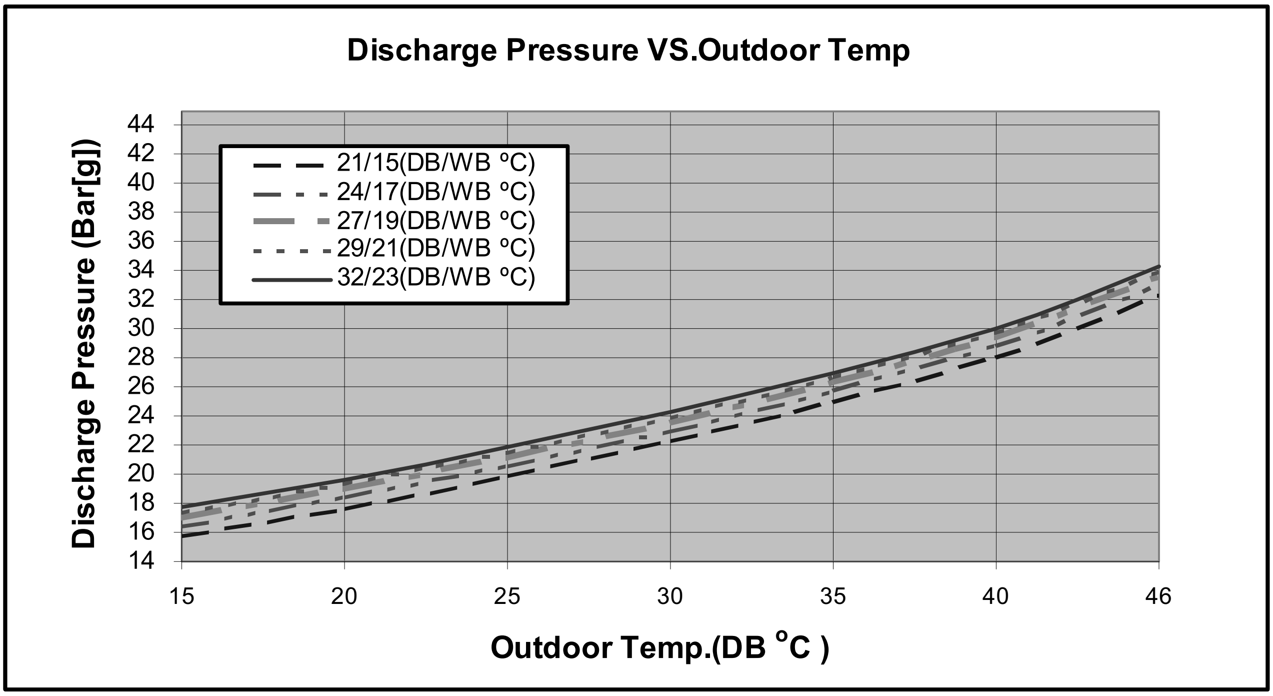
TH – Total Heating Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

5.2 Pressure Curves.

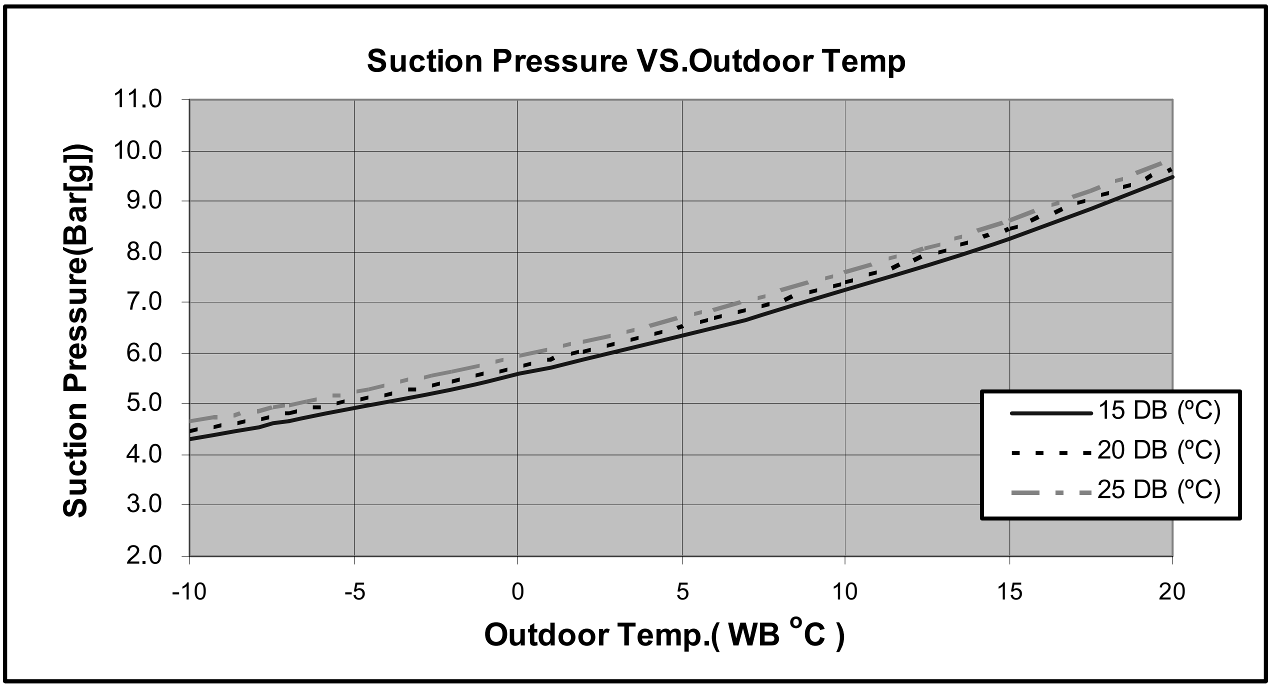
5.2.1 ALPHA 9

5.2.2 Cooling.

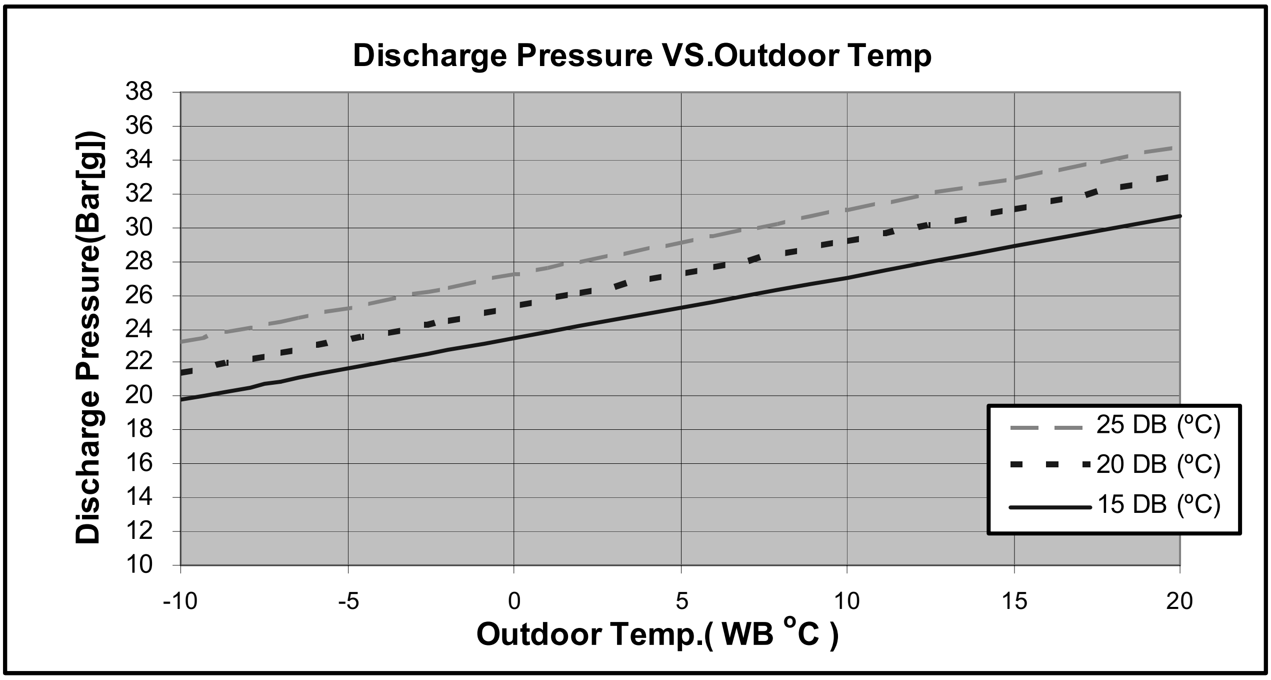




5.2.3 Heating.



Suction Pressure VS.Outdoor Temp
Suction Pressure(Bar[g])
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
-10
-5
0
5
10
15
20
Outdoor Temp.(WB °C)
15 DB (ºC)
20 DB (ºC)
25 DB (ºC)



Discharge Pressure VS.Outdoor Temp
Discharge Pressure(Bar[g])
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
-10
-5
0
5
10
15
20
Outdoor Temp.(WB °C)
25 DB (ºC)
20 DB (ºC)
15 DB (ºC)

5.3 DUO ALPHA (9+12):Room A + Room B

5.3.1 Cooling Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR DB OU COIL (°C)	DATA	ENTERING AIR WB/DB ID COIL (°C)				
		15/21	17/24	19/27	21/29	23/32
15(1)	TC	6.12	6.34	6.49	6.65	6.75
	SC	4.10	4.28	4.45	4.56	4.64
	PI	1.46	1.46	1.47	1.47	1.48
20(1)	TC	5.92	6.24	6.44	6.59	6.74
	SC	4.02	4.24	4.42	4.54	4.63
	PI	1.59	1.59	1.60	1.60	1.61
25	TC	5.61	6.05	6.36	6.56	6.72
	SC	3.92	4.16	4.39	4.51	4.59
	PI	1.71	1.73	1.74	1.75	1.76
30	TC	5.24	5.71	6.17	6.39	6.58
	SC	3.80	4.03	4.29	4.41	4.50
	PI	1.85	1.88	1.89	1.91	1.92
35	TC	4.85	5.27	**5.81**	6.10	6.39
	SC	3.61	3.87	**4.19**	4.31	4.40
	PI	1.99	2.03	**2.06**	2.08	2.09
40	TC	4.41	4.81	5.24	5.73	6.03
	SC	3.40	3.66	3.96	4.09	4.17
	PI	2.15	2.18	2.22	2.25	2.27
46	TC	3.83	4.19	4.60	5.09	5.48
	SC	3.13	3.36	3.61	3.74	3.82
	PI	2.35	2.38	2.44	2.47	2.50

LEGEND

TC – Total Cooling Capacity, kW
SC – Sensible Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

5.3.2 Heating Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

	ENTERING AIR DB ID COIL (°C)					
	15		20		25	
ENTERING AIR WB OU COIL (°C)	TH	PI	TH	PI	TH	PI
-10	3.56	1.67	3.42	1.78	3.29	1.87
-7	3.83	1.71	3.69	1.81	3.56	1.91
-2	4.07	1.73	3.93	1.84	3.79	1.94
2	4.95	1.82	4.74	1.93	4.54	2.05
6	6.34	1.95	**6.16**	**2.09**	5.94	2.22
10	6.90	2.06	6.71	2.20	6.53	2.36
15	7.45	2.15	7.27	2.32	7.08	2.47
20	7.85	2.22	7.67	2.40	7.45	2.59

* the above chart includes the weighted deicing infleuence.

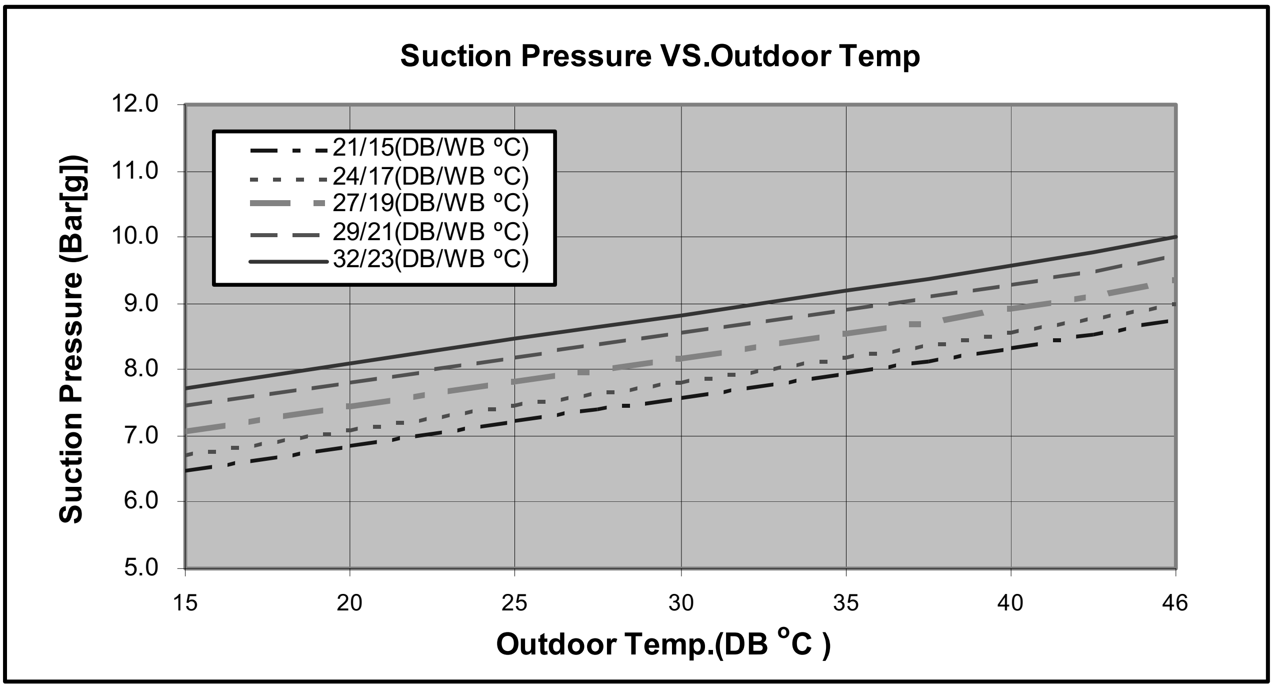
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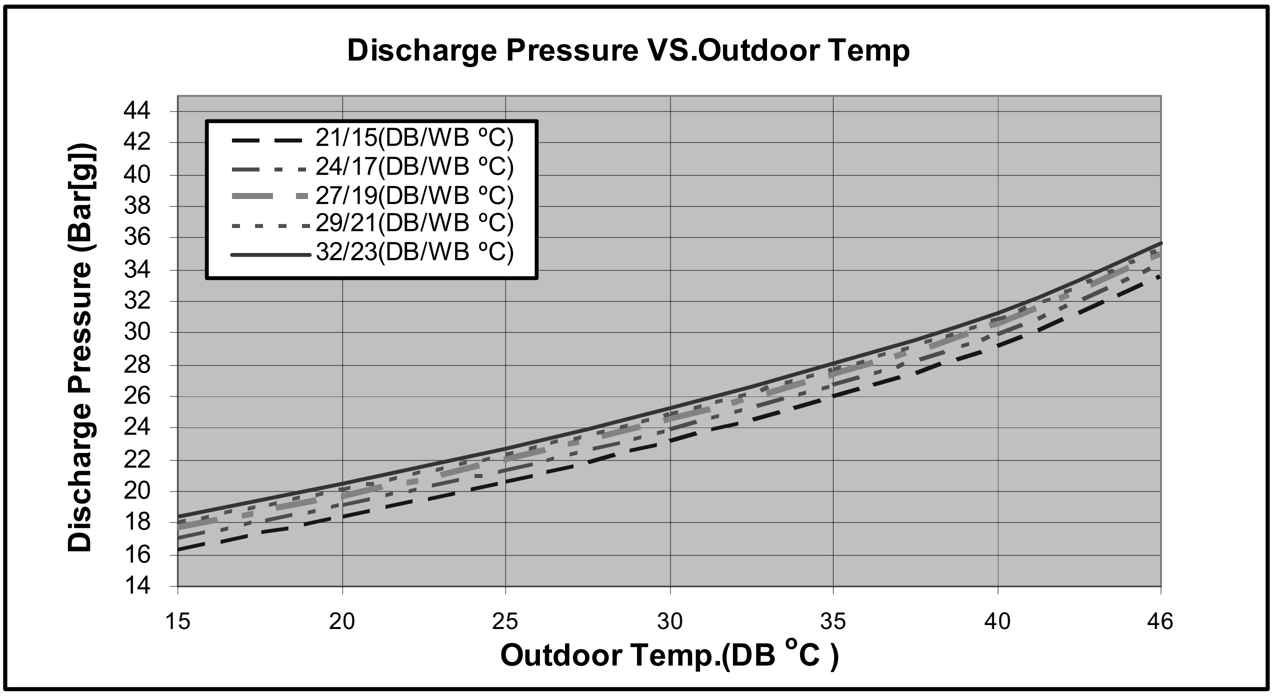
TH – Total Heating Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

5.4 Pressure Curves.

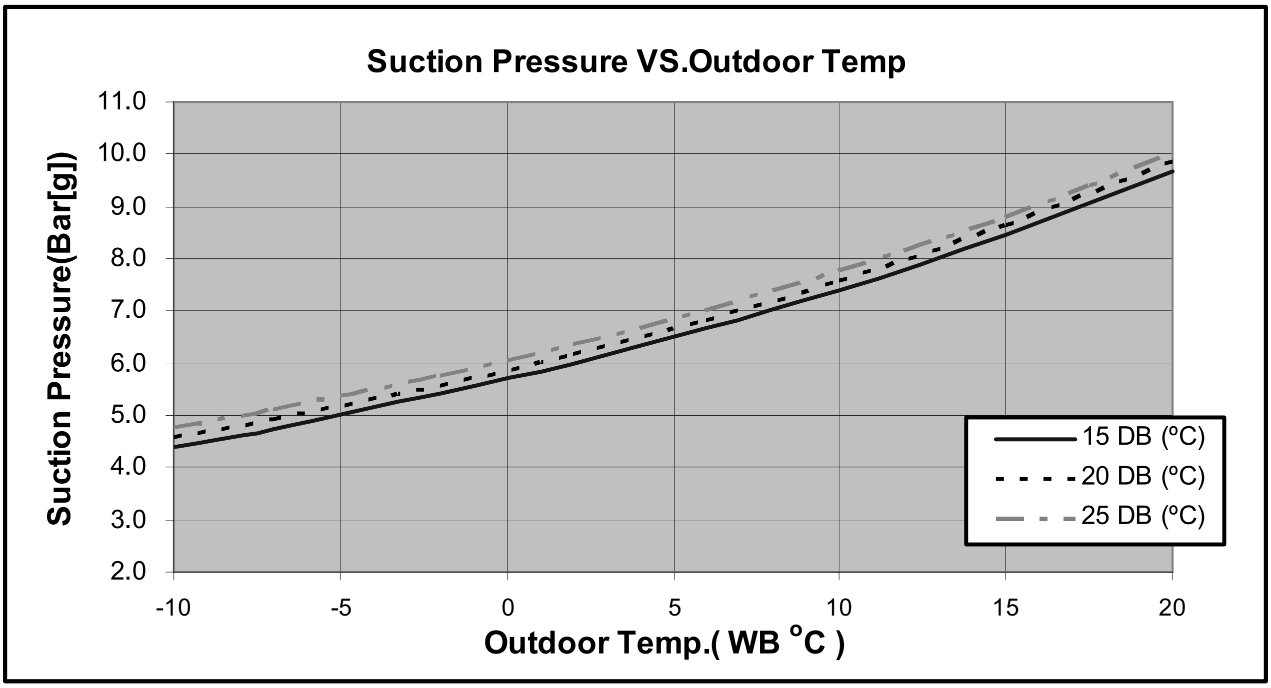
5.4.1 ALPHA 9

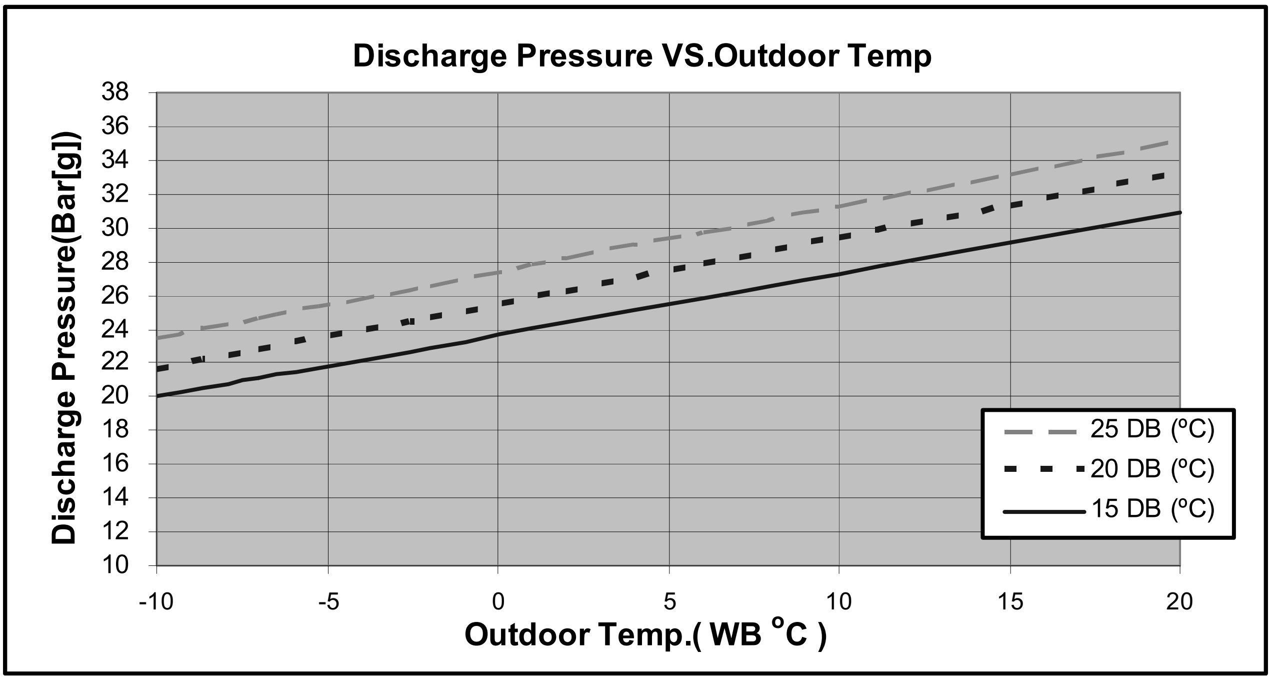
5.4.2 Cooling.





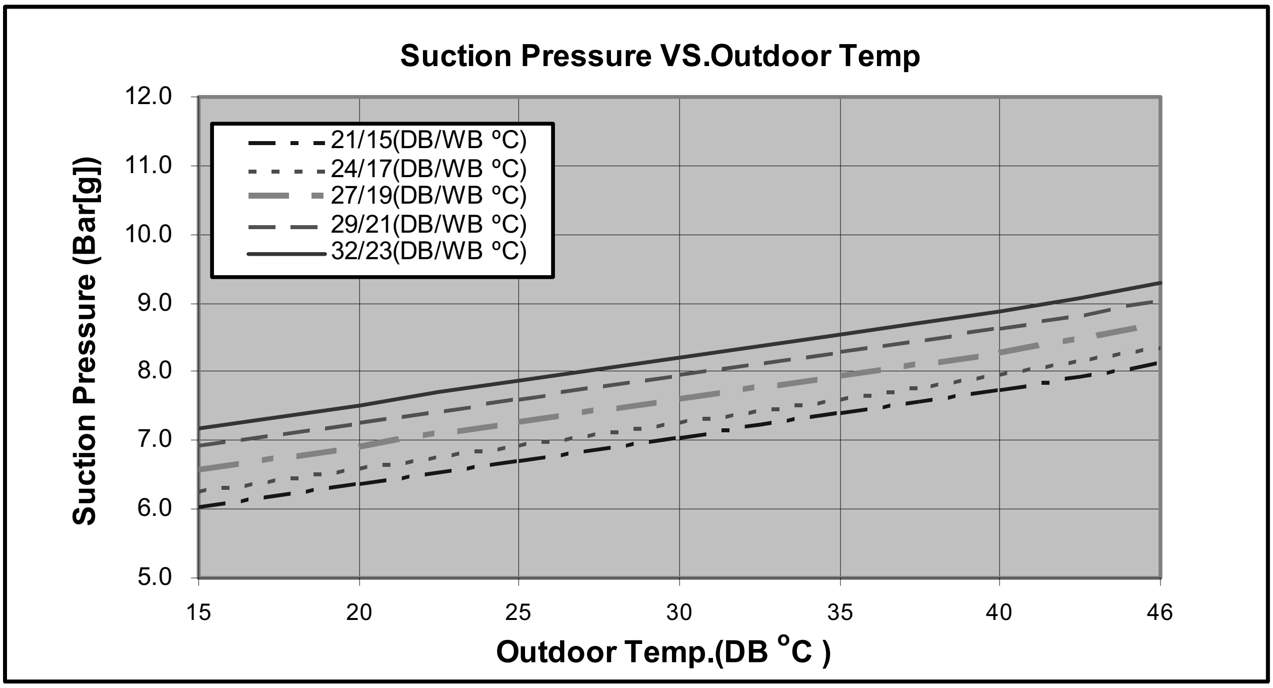
5.4.3 Heating.

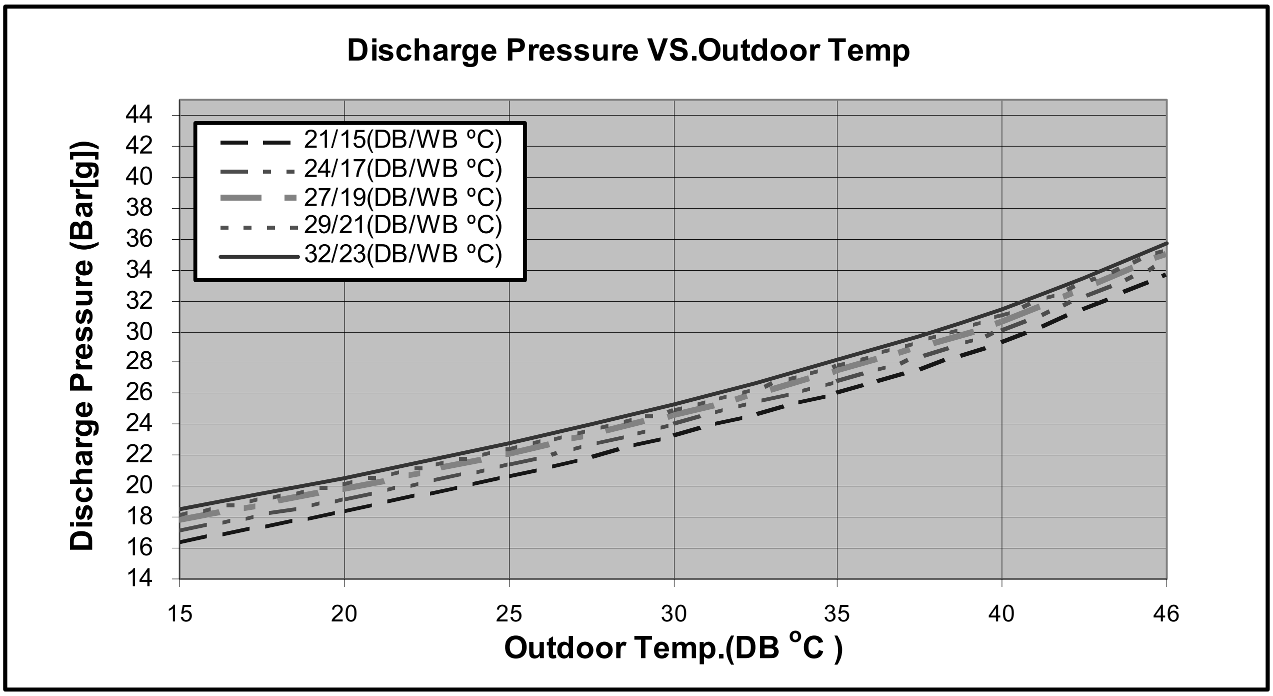

Suction Pressure VS.Outdoor Temp
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
Suction Pressure(Bar[g])
-10
-5
0
5
10
15
20
Outdoor Temp.(WB °C)
15 DB (ºC)
20 DB (ºC)
25 DB (ºC)


Discharge Pressure VS.Outdoor Temp
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
Discharge Pressure(Bar[g])
-10
-5
0
5
10
15
20
Outdoor Temp.(WB °C)
25 DB (ºC)
20 DB (ºC)
15 DB (ºC)

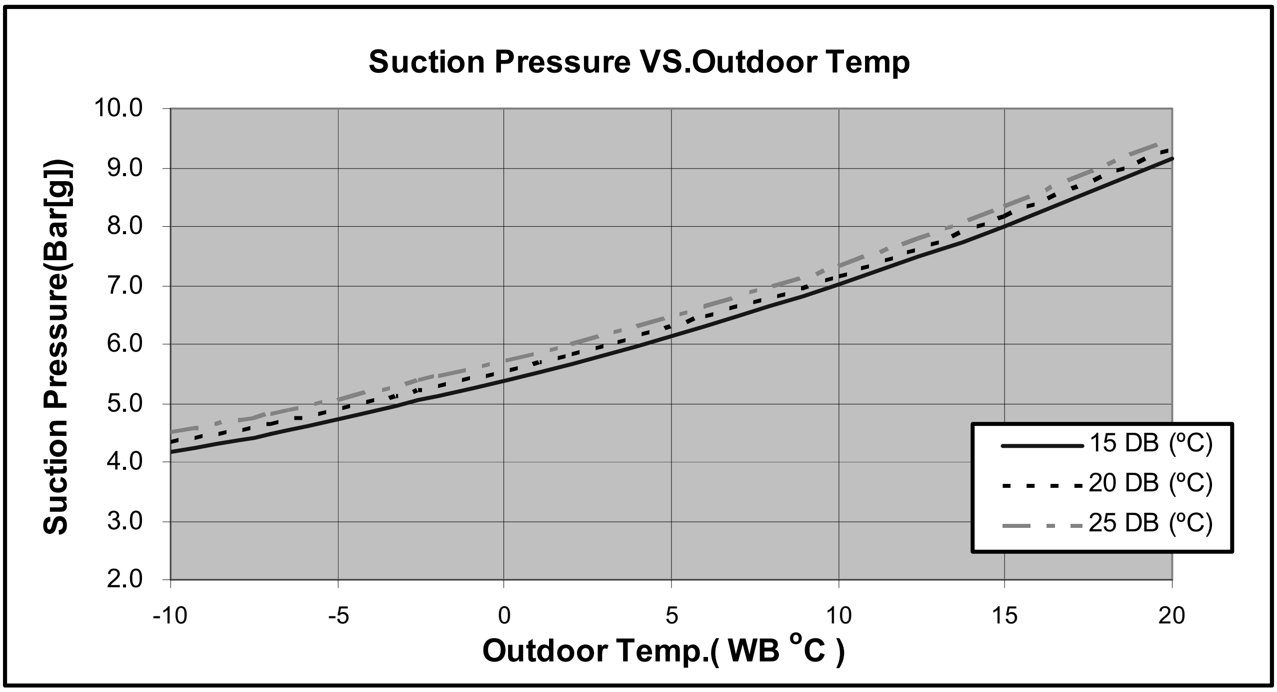
5.4.4 ALPHA 12

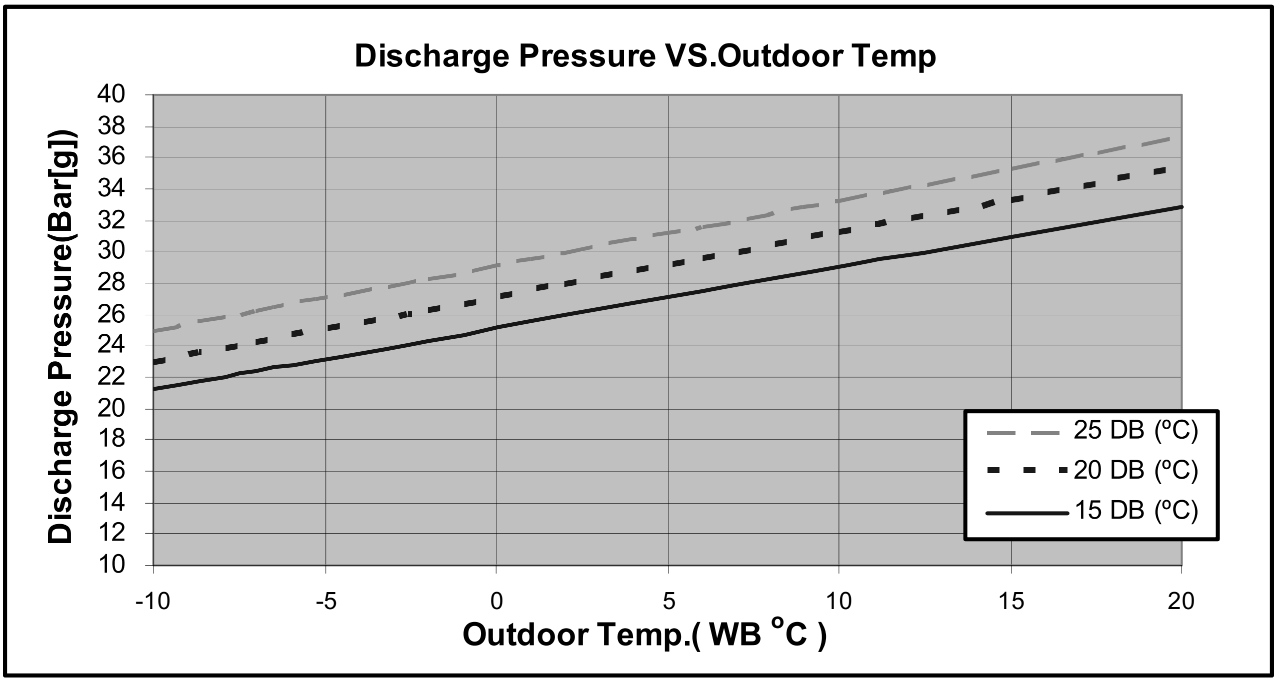
5.4.5 Cooling.





5.4.6 Heating.





CONTENT

5.5 DUO ALPHA (12+12):Room A + Room B

5.5.1 Cooling Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR DB OU COIL (°C)	DATA	ENTERING AIR WB/DB ID COIL (°C)				
		15/21	17/24	19/27	21/29	23/32
15(1)	TC	7.38	7.64	7.82	8.01	8.13
	SC	4.08	4.25	4.42	4.53	4.61
	PI	1.77	1.78	1.78	1.78	1.79
20(1)	TC	7.14	7.52	7.76	7.94	8.12
	SC	4.00	4.22	4.39	4.52	4.60
	PI	1.92	1.93	1.94	1.95	1.95
25	TC	6.75	7.29	7.67	7.90	8.09
	SC	3.90	4.13	4.36	4.49	4.57
	PI	2.08	2.09	2.11	2.12	2.14
30	TC	6.32	6.88	7.43	7.69	7.92
	SC	3.77	4.01	4.26	4.39	4.47
	PI	2.24	2.28	2.30	2.31	2.34
35	TC	5.85	6.35	**7.00**	7.35	7.70
	SC	3.59	3.85	**4.17**	4.29	4.37
	PI	2.42	2.46	**2.50**	2.52	2.53
40	TC	5.32	5.79	6.32	6.91	7.26
	SC	3.38	3.64	3.94	4.07	4.15
	PI	2.61	2.65	2.70	2.73	2.76
46	TC	4.61	5.04	5.55	6.13	6.60
	SC	3.12	3.34	3.59	3.72	3.80
	PI	2.85	2.89	2.96	3.00	3.04

LEGEND

TC – Total Cooling Capacity, kW
SC – Sensible Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

5.5.2 Heating Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

	ENTERING AIR DB ID COIL (°C)					
	15		20		25	
ENTERING AIR WB OU COIL (°C)	TH	PI	TH	PI	TH	PI
-10	3.85	2.00	3.70	2.13	3.56	2.24
-7	4.14	2.05	3.99	2.16	3.85	2.28
-2	4.40	2.08	4.25	2.20	4.10	2.33
2	5.35	2.18	5.13	2.31	4.91	2.45
6	7.55	2.34	**7.33**	**2.50**	7.07	2.66
10	8.21	2.47	7.99	2.64	7.77	2.82
15	8.87	2.58	8.65	2.78	8.43	2.95
20	9.35	2.65	9.13	2.88	8.87	3.10

* the above chart includes the weighted deicing infleuence.

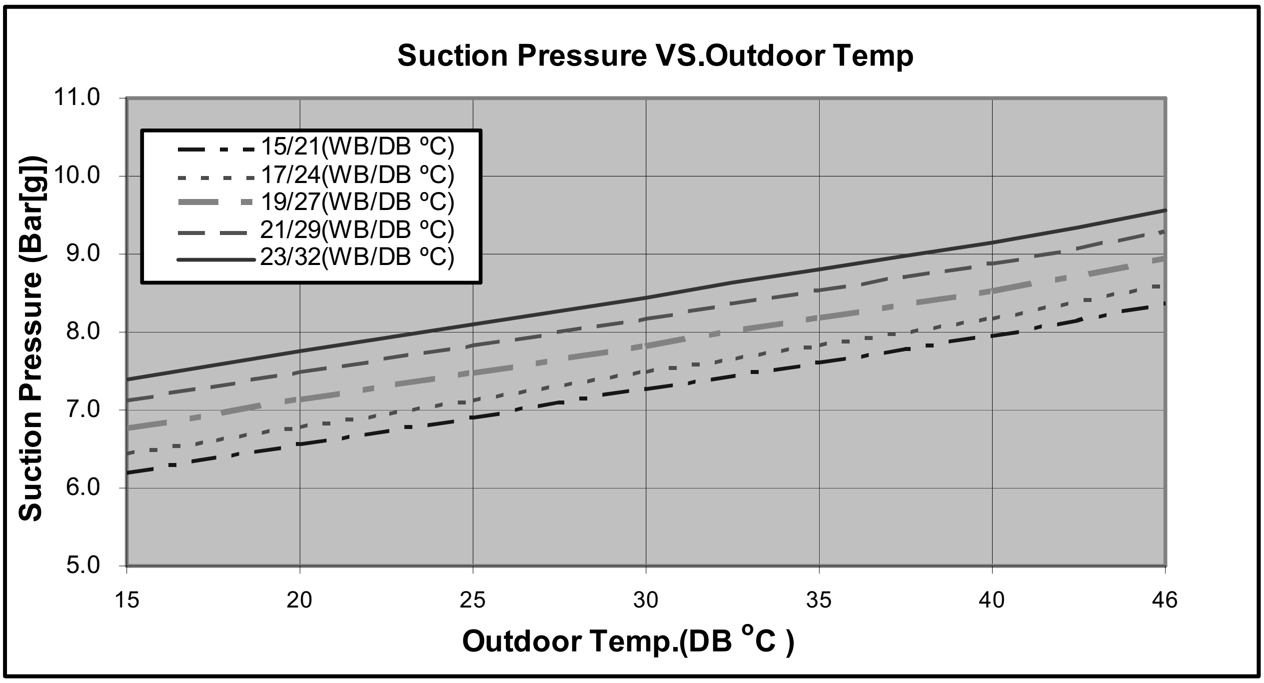
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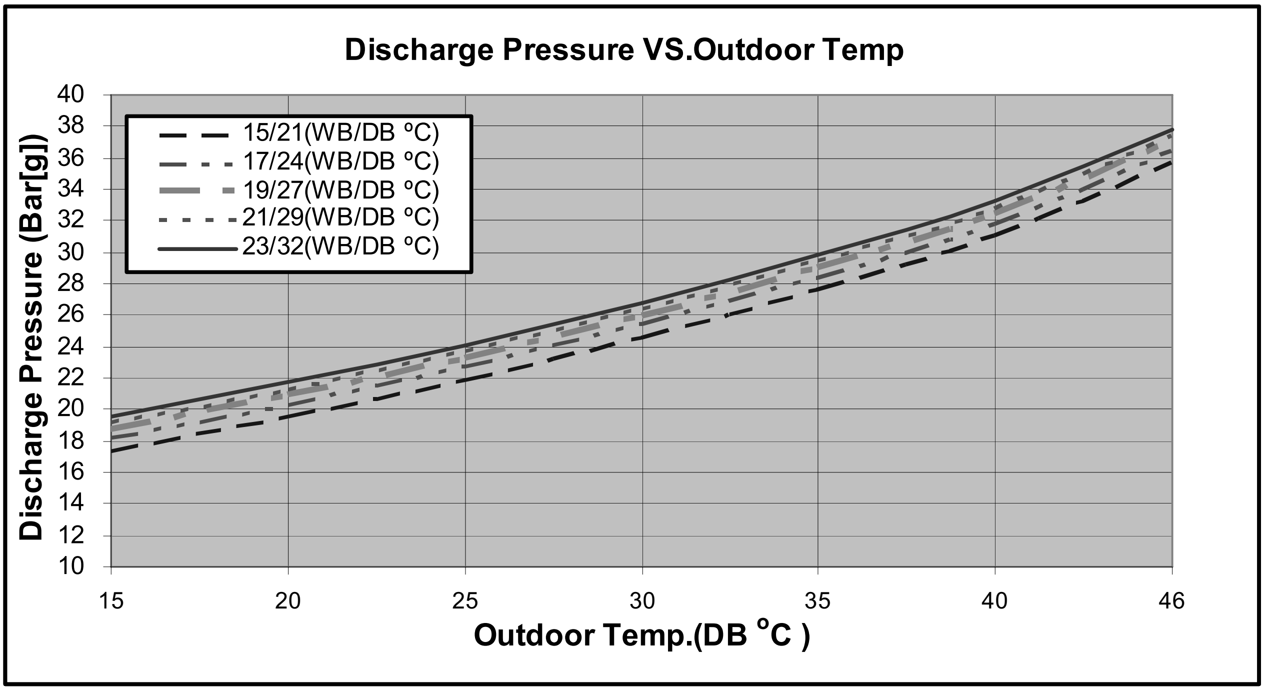
TH – Total Heating Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

5.6 Pressure Curves.

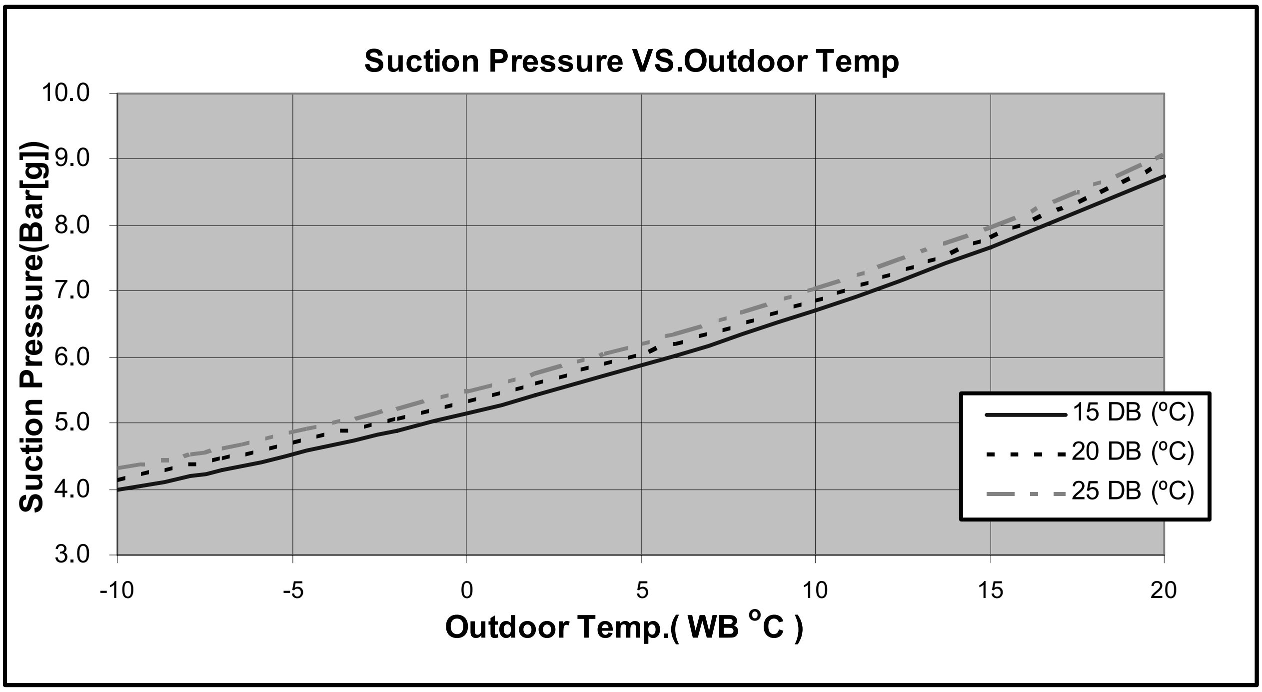
5.6.1 ALPHA 12

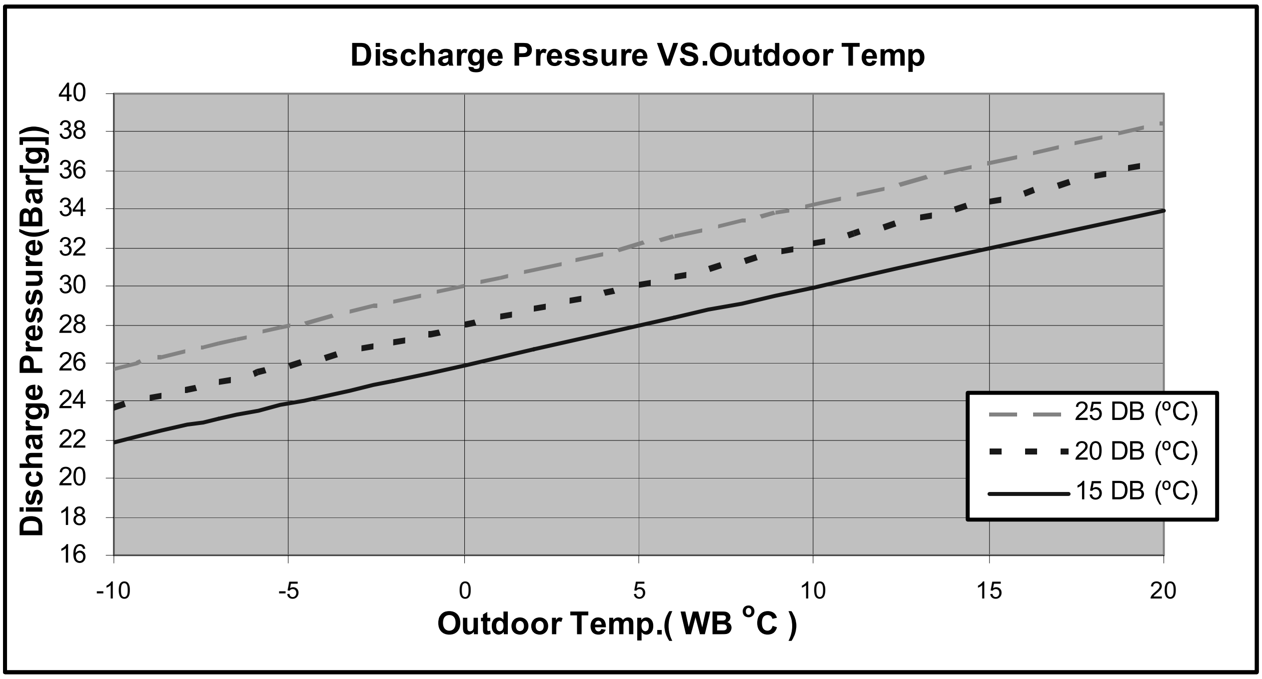
5.6.2 Cooling.





5.6.3 Heating.


Suction Pressure VS.Outdoor Temp
Suction Pressure(Bar[g])
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
-10
-5
0
5
10
15
20
Outdoor Temp.(WB °C)
15 DB (ºC)
20 DB (ºC)
25 DB (ºC)


Discharge Pressure VS.Outdoor Temp
Discharge Pressure(Bar[g])
40
38
36
34
32
30
28
26
24
22
20
18
16
-10
-5
0
5
10
15
20
Outdoor Temp.(WB °C)
25 DB (ºC)
20 DB (ºC)
15 DB (ºC)

5.7 DUO WNG (9+9):Room A + Room B

5.7.1 Cooling Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR DB OU COIL (°C)	DATA	ENTERING AIR WB/DB ID COIL (°C)				
		15/21	17/24	19/27	21/29	23/32
15(1)	TC	6.03	6.24	6.39	6.54	6.64
	SC	4.18	4.36	4.53	4.64	4.73
	PI	1.26	1.26	1.27	1.27	1.28
20(1)	TC	5.83	6.15	6.34	6.49	6.63
	SC	4.10	4.32	4.50	4.63	4.72
	PI	1.37	1.37	1.38	1.39	1.39
25	TC	5.52	5.96	6.27	6.45	6.61
	SC	3.99	4.24	4.47	4.60	4.68
	PI	1.48	1.49	1.50	1.51	1.52
30	TC	5.16	5.62	6.07	6.29	6.47
	SC	3.87	4.11	4.37	4.50	4.58
	PI	1.60	1.62	1.63	1.65	1.66
35	TC	4.78	5.19	**5.72**	6.01	6.29
	SC	3.68	3.94	**4.27**	4.39	4.48
	PI	1.72	1.75	**1.78**	1.79	1.80
40	TC	4.35	4.73	5.16	5.64	5.93
	SC	3.47	3.73	4.04	4.17	4.25
	PI	1.86	1.89	1.92	1.94	1.96
46	TC	3.77	4.12	4.53	5.01	5.40
	SC	3.19	3.42	3.68	3.81	3.90
	PI	2.03	2.06	2.11	2.14	2.16

LEGEND

TC – Total Cooling Capacity, kW
SC – Sensible Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

5.7.2 Heating Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

	ENTERING AIR DB ID COIL (°C)					
	15		20		25	
ENTERING AIR WB OU COIL (°C)	TH	PI	TH	PI	TH	PI
-10	2.82	1.34	2.71	1.42	2.60	1.49
-7	3.03	1.37	2.93	1.44	2.82	1.52
-2	3.22	1.39	3.11	1.47	3.01	1.55
2	3.92	1.45	3.76	1.54	3.60	1.64
6	5.53	1.56	**5.37**	**1.67**	5.18	1.77
10	6.01	1.65	5.85	1.76	5.69	1.88
15	6.50	1.72	6.34	1.85	6.18	1.97
20	6.85	1.77	6.69	1.92	6.50	2.07

* the above chart includes the weighted deicing infleuence.

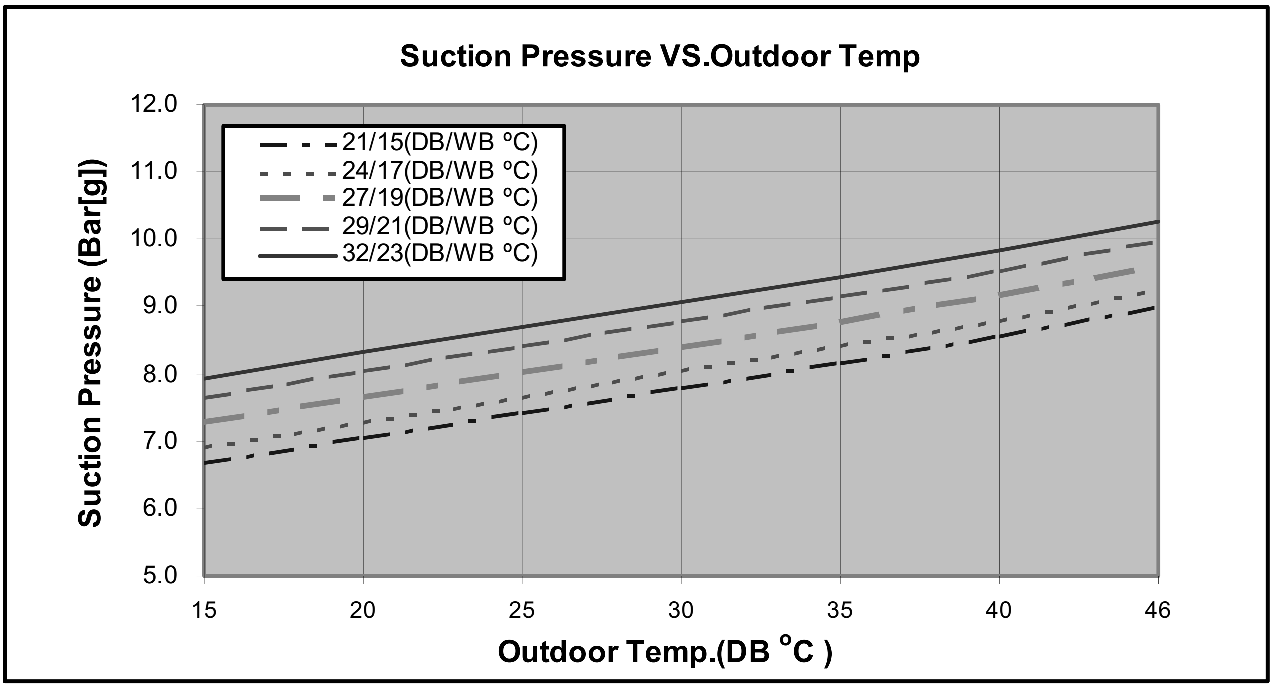
LEGEND

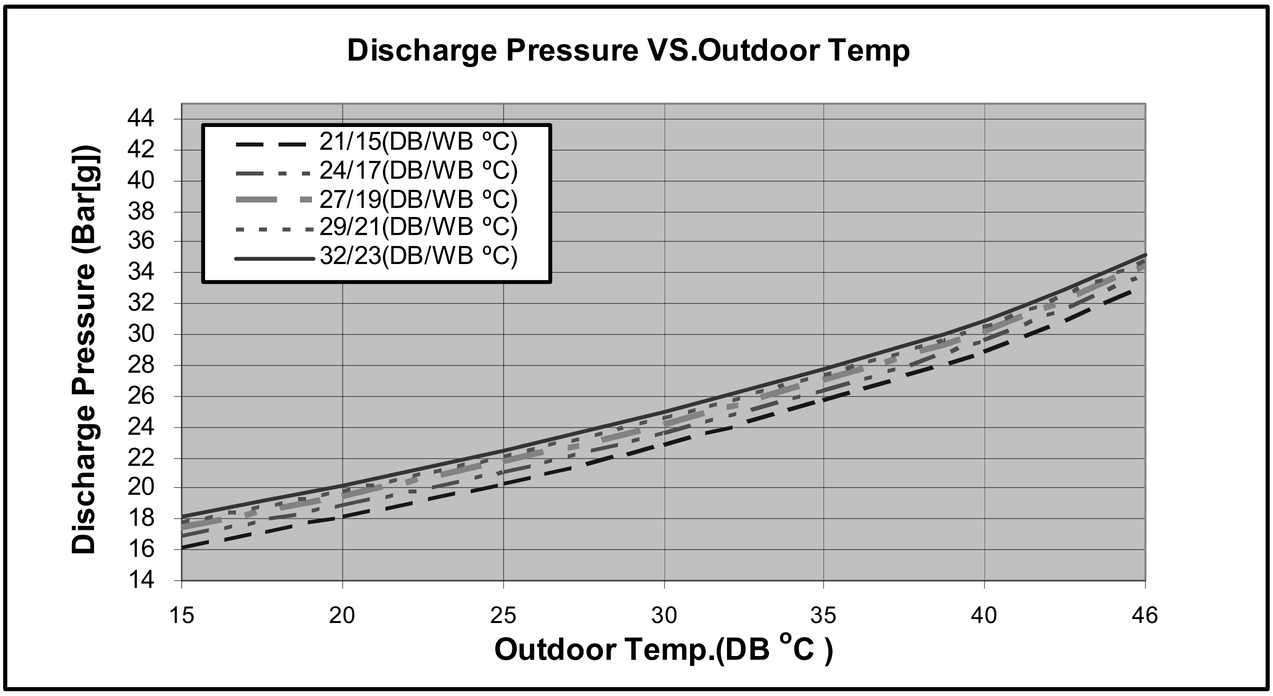
TH – Total Heating Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

5.8 Pressure Curves.

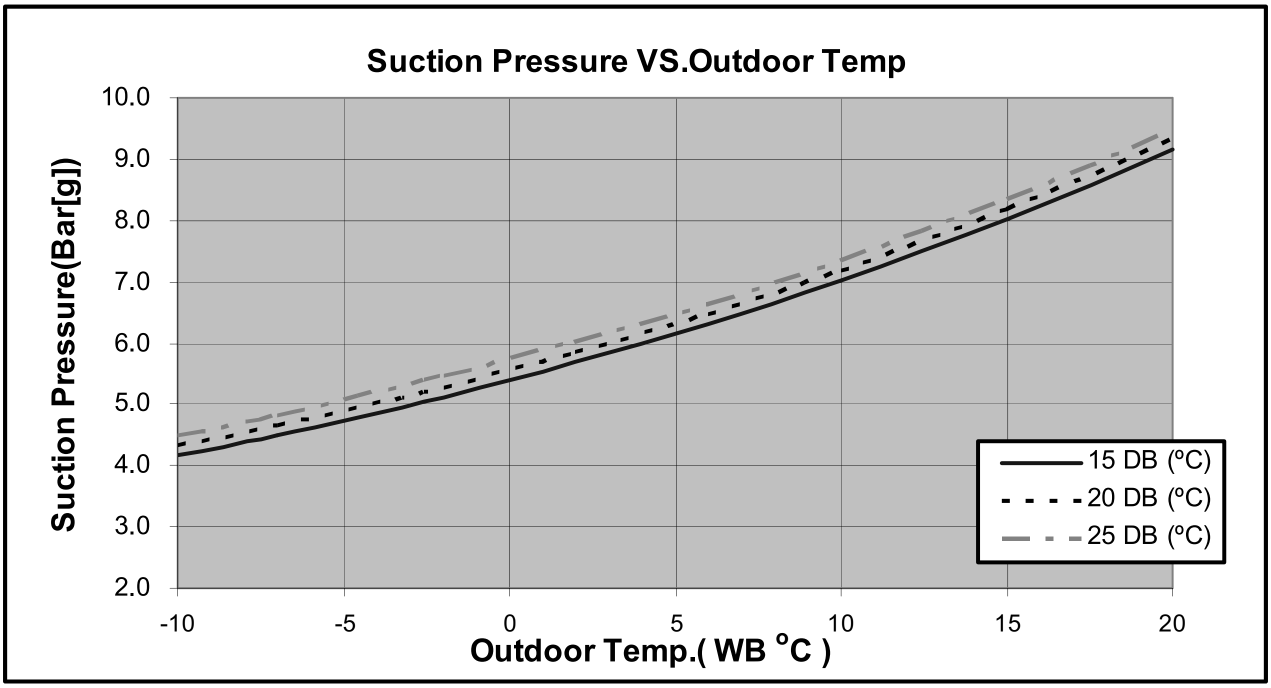
5.8.1 WNG 9

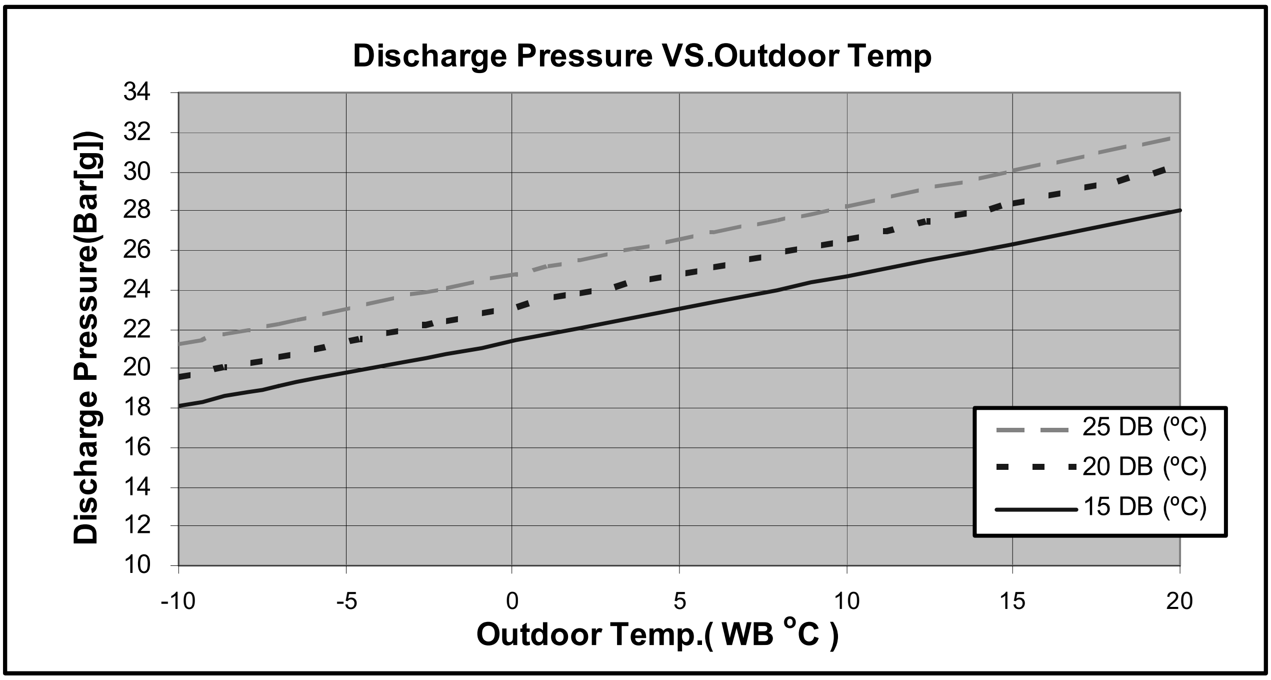
5.8.2 Cooling.





5.8.3 Heating.


Suction Pressure VS.Outdoor Temp
Suction Pressure(Bar[g])
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
-10
-5
0
5
10
15
20
Outdoor Temp.(WB °C)
15 DB (ºC)
20 DB (ºC)
25 DB (ºC)


Discharge Pressure VS.Outdoor Temp
Discharge Pressure(Bar[g])
34
32
30
28
26
24
22
20
18
16
14
12
10
-10
-5
0
5
10
15
20
Outdoor Temp.(WB °C)
25 DB (ºC)
20 DB (ºC)
15 DB (ºC)

5.9 DUO WNG (9+12): Room A + Room B

5.9.1 Cooling Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR DB OU COIL (°C)	DATA	ENTERING AIR WB/DB ID COIL (°C)				
		15/21	17/24	19/27	21/29	23/32
15(1)	TC	6.25	6.47	6.63	6.78	6.89
	SC	4.58	4.78	4.97	5.09	5.18
	PI	1.47	1.47	1.47	1.48	1.48
20(1)	TC	6.05	6.37	6.58	6.73	6.88
	SC	4.49	4.74	4.94	5.08	5.17
	PI	1.59	1.60	1.60	1.61	1.62
25	TC	5.72	6.18	6.50	6.69	6.85
	SC	4.38	4.64	4.90	5.04	5.13
	PI	1.72	1.73	1.75	1.76	1.77
30	TC	5.35	5.83	6.29	6.52	6.71
	SC	4.24	4.51	4.79	4.93	5.02
	PI	1.86	1.88	1.90	1.92	1.93
35	TC	4.95	5.38	**5.93**	6.23	6.52
	SC	4.03	4.32	**4.68**	4.82	4.91
	PI	2.00	2.04	**2.07**	2.09	2.10
40	TC	4.50	4.90	5.35	5.85	6.15
	SC	3.80	4.09	4.43	4.57	4.66
	PI	2.16	2.19	2.23	2.26	2.28
46	TC	3.91	4.27	4.70	5.19	5.59
	SC	3.50	3.75	4.04	4.18	4.27
	PI	2.36	2.40	2.45	2.49	2.51

LEGEND

TC – Total Cooling Capacity, kW
SC – Sensible Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

5.9.2 Heating Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

	ENTERING AIR DB ID COIL (°C)					
	15		20		25	
ENTERING AIR WB OU COIL (°C)	TH	PI	TH	PI	TH	PI
-10	3.54	1.58	3.41	1.68	3.27	1.76
-7	3.81	1.62	3.67	1.70	3.54	1.80
-2	4.05	1.64	3.91	1.73	3.78	1.83
2	4.92	1.71	4.72	1.82	4.52	1.93
6	6.31	1.84	**6.13**	**1.97**	5.92	2.09
10	6.87	1.94	6.68	2.08	6.50	2.22
15	7.42	2.03	7.23	2.19	7.05	2.32
20	7.82	2.09	7.63	2.27	7.42	2.44

* the above chart includes the weighted deicing infleuence.

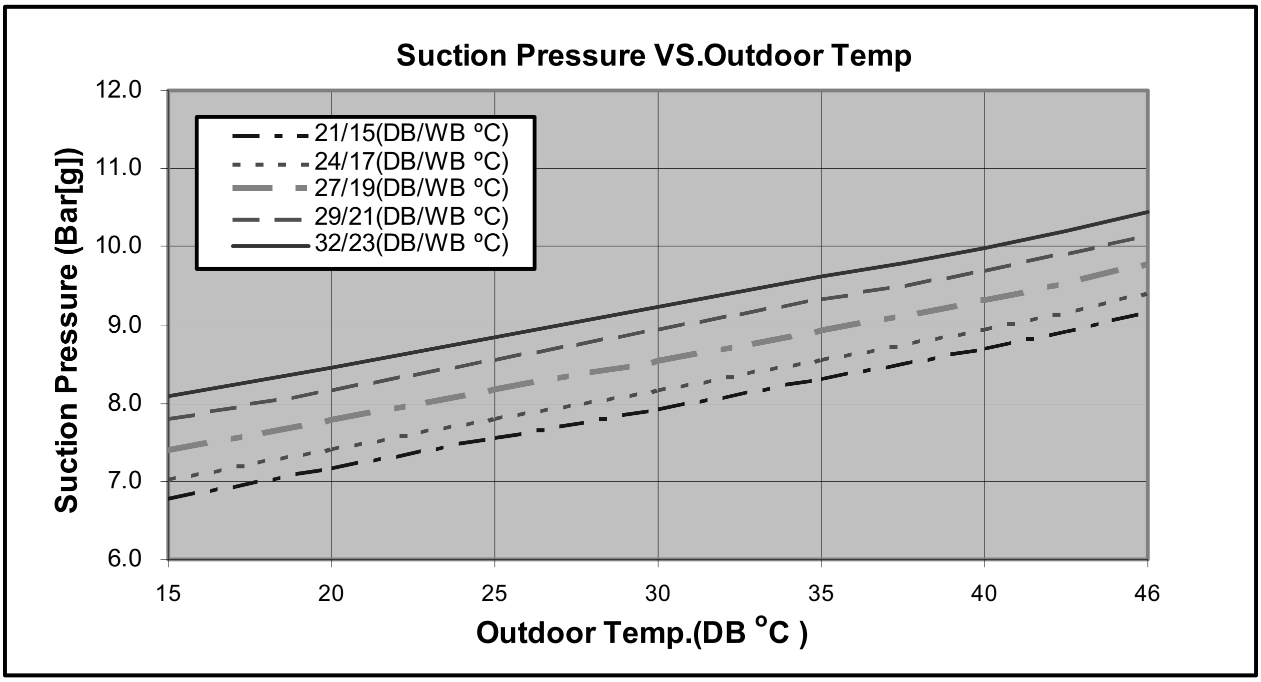
LEGEND

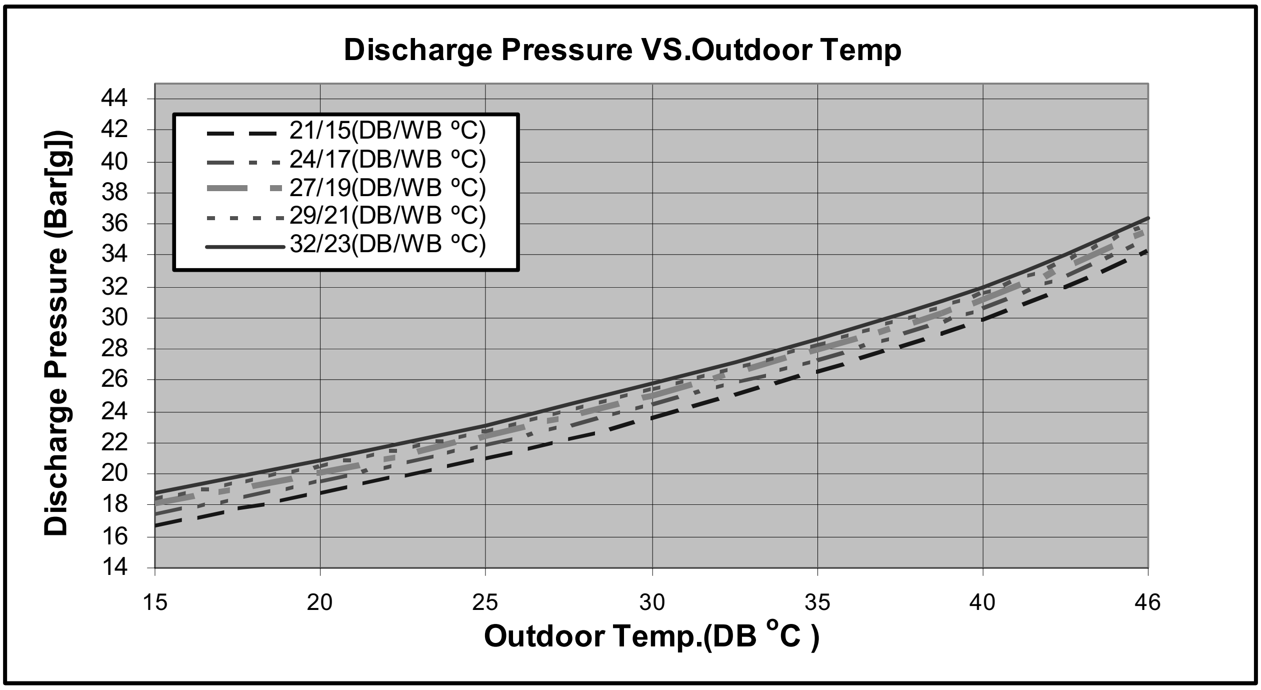
TH – Total Heating Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

5.10 Pressure Curves.

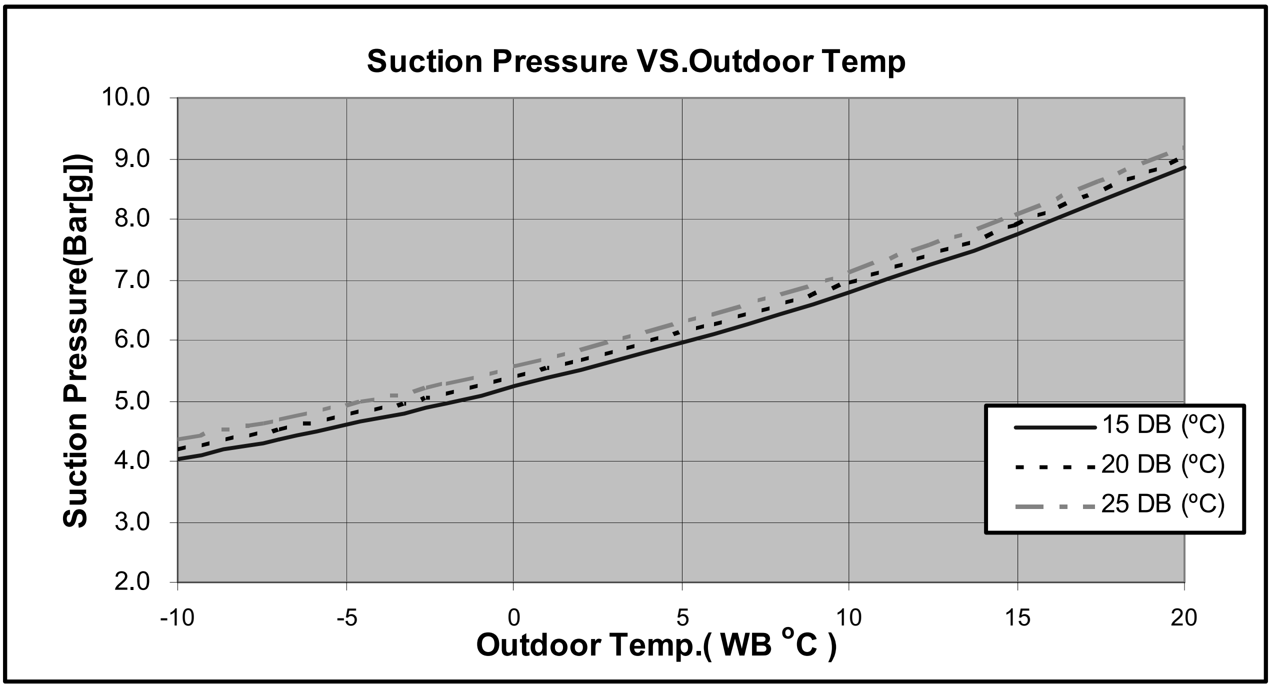
5.10.1 WNG 9

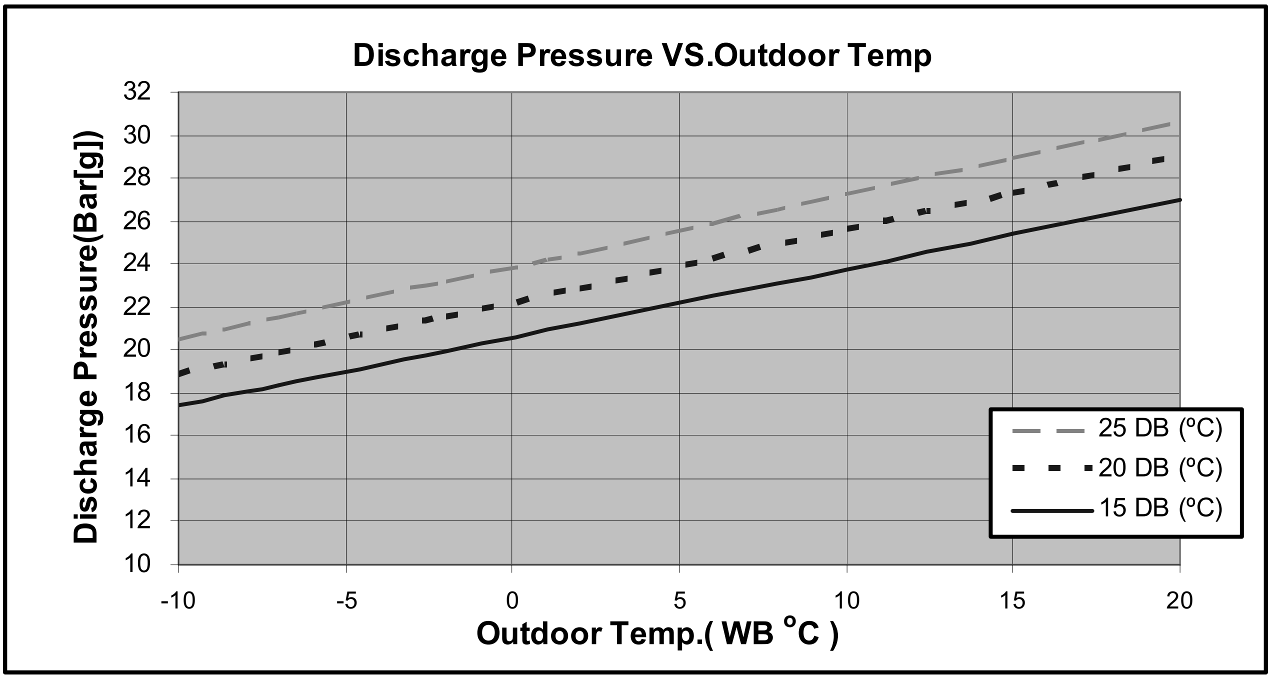
5.10.2 Cooling.





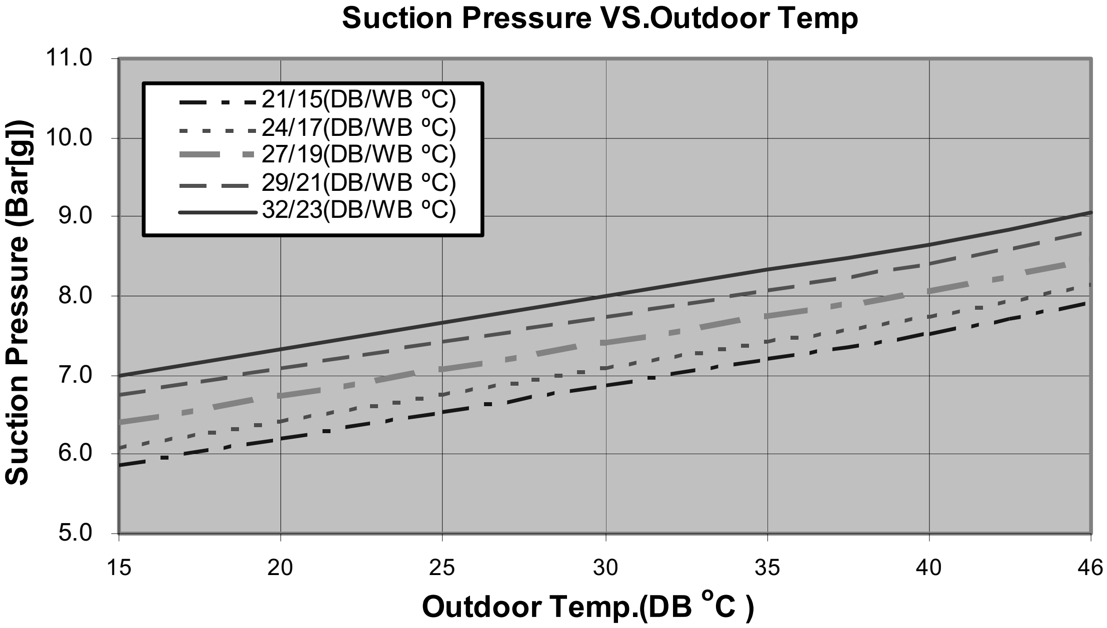
5.10.3 Heating.

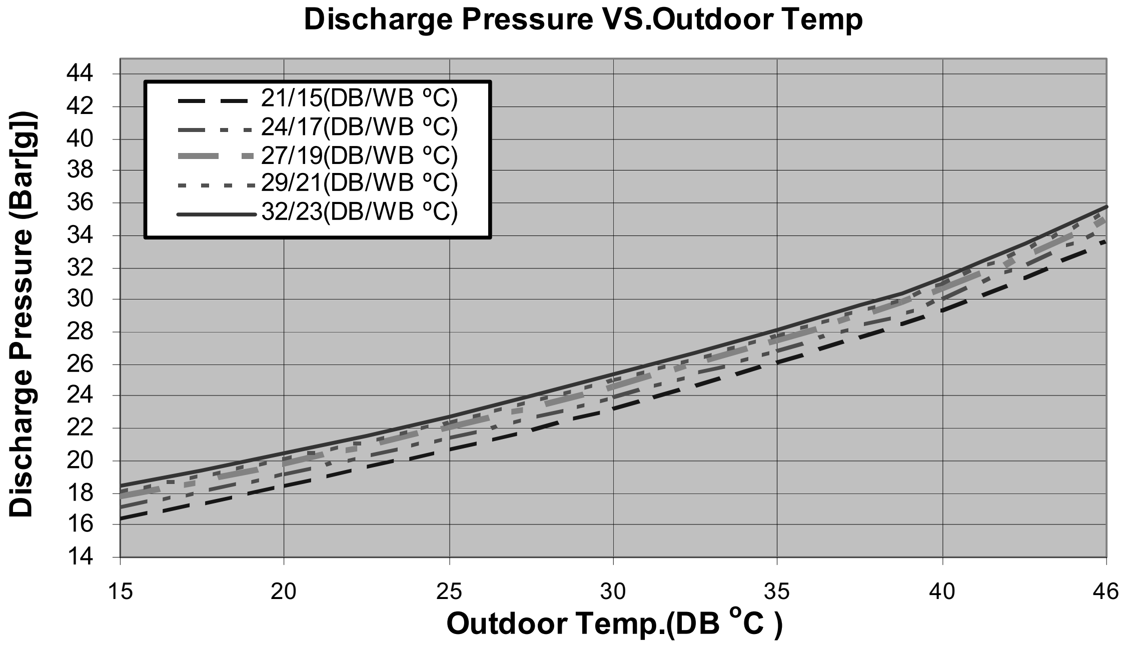




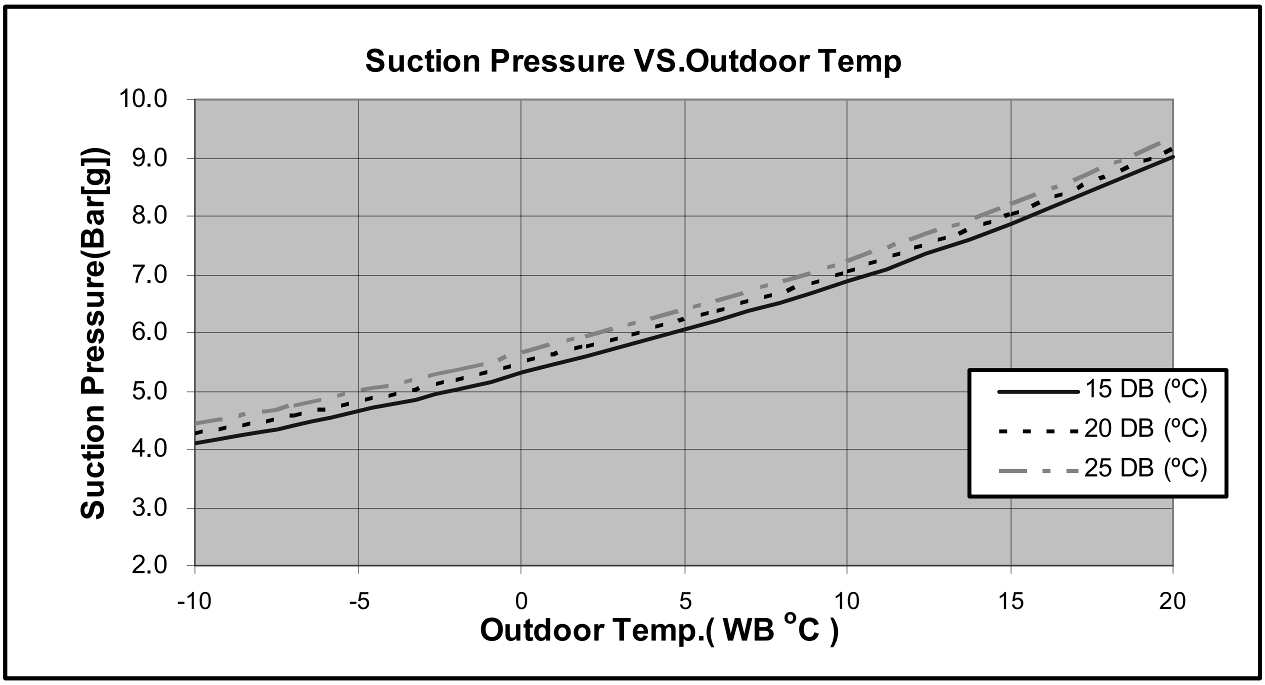
5.10.4 WNG 12

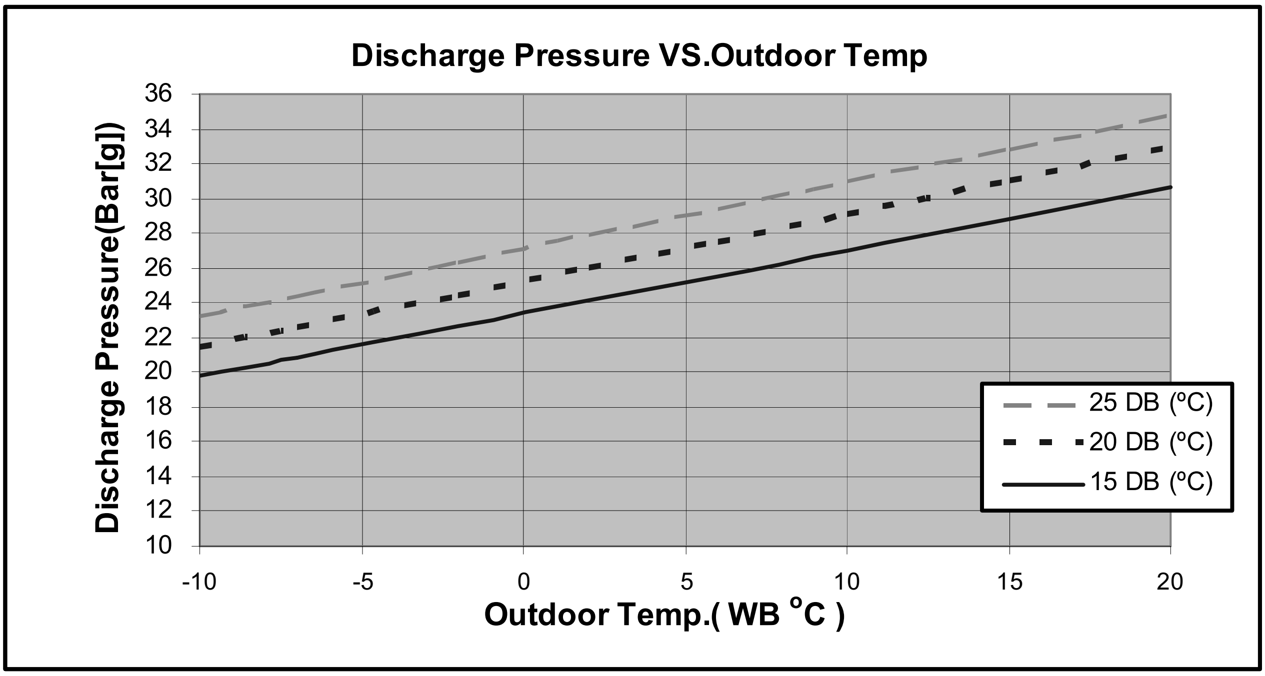
5.10.5 Cooling.





5.10.6 Heating.





5.11 DUO WNG (12+12): Room A + Room B

5.11.1 Cooling Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR DB OU COIL (°C)	DATA	ENTERING AIR WB/DB ID COIL (°C)				
		15/21	17/24	19/27	21/29	23/32
15(1)	TC	7.38	7.64	7.82	8.01	8.13
	SC	4.06	4.24	4.40	4.51	4.59
	PI	1.77	1.78	1.78	1.78	1.79
20(1)	TC	7.14	7.52	7.76	7.94	8.12
	SC	3.98	4.20	4.37	4.50	4.58
	PI	1.92	1.93	1.94	1.95	1.95
25	TC	6.75	7.29	7.67	7.90	8.09
	SC	3.88	4.12	4.34	4.47	4.55
	PI	2.08	2.09	2.11	2.12	2.14
30	TC	6.32	6.88	7.43	7.69	7.92
	SC	3.76	3.99	4.25	4.37	4.45
	PI	2.24	2.28	2.30	2.31	2.34
35	TC	5.85	6.35	**7.00**	7.35	7.70
	SC	3.57	3.83	**4.15**	4.27	4.35
	PI	2.42	2.46	**2.50**	2.52	2.53
40	TC	5.32	5.79	6.32	6.91	7.26
	SC	3.37	3.62	3.92	4.05	4.13
	PI	2.61	2.65	2.70	2.73	2.76
46	TC	4.61	5.04	5.55	6.13	6.60
	SC	3.10	3.32	3.58	3.70	3.79
	PI	2.85	2.89	2.96	3.00	3.04

LEGEND

TC – Total Cooling Capacity, kW
SC – Sensible Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

5.11.2 Heating Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

	ENTERING AIR DB ID COIL (°C)					
	15		20		25	
ENTERING AIR WB OU COIL (°C)	TH	PI	TH	PI	TH	PI
-10	3.85	1.84	3.70	1.96	3.56	2.06
-7	4.14	1.89	3.99	1.99	3.85	2.10
-2	4.40	1.91	4.25	2.02	4.10	2.14
2	5.35	2.00	5.13	2.13	4.91	2.25
6	7.55	2.15	**7.33**	**2.30**	7.07	2.44
10	8.21	2.27	7.99	2.43	7.77	2.59
15	8.87	2.37	8.65	2.55	8.43	2.71
20	9.35	2.44	9.13	2.65	8.87	2.85

* the above chart includes the weighted deicing infleuence.

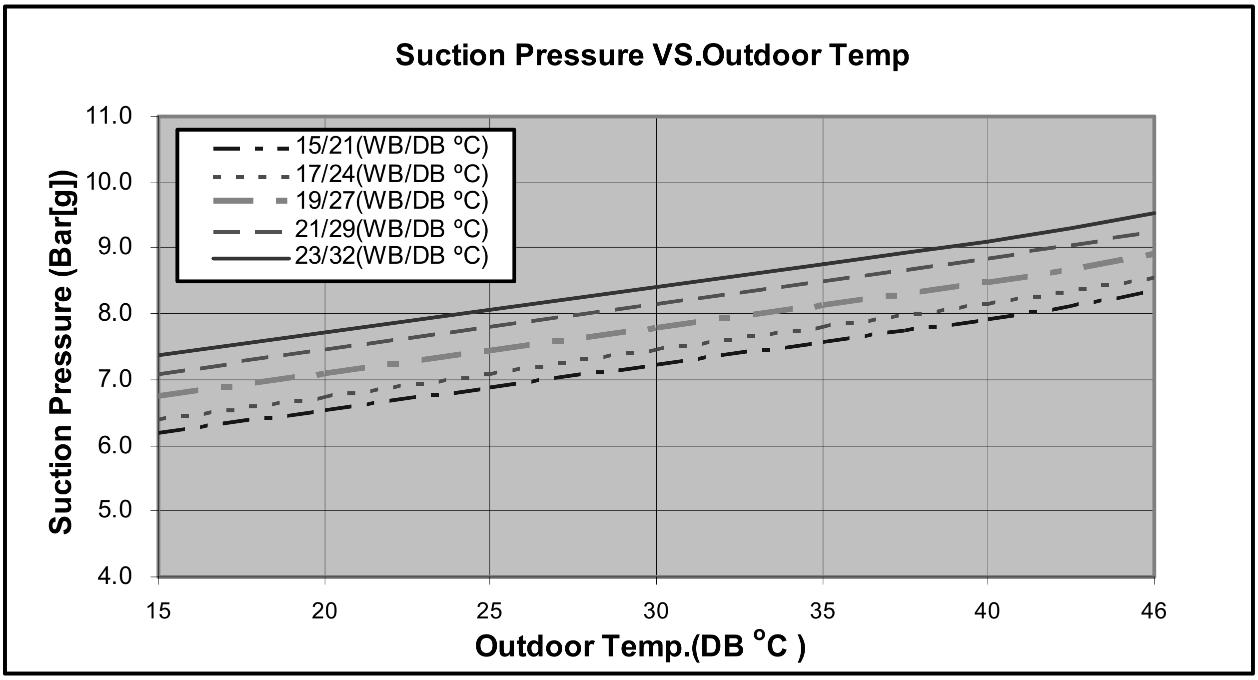
LEGEND

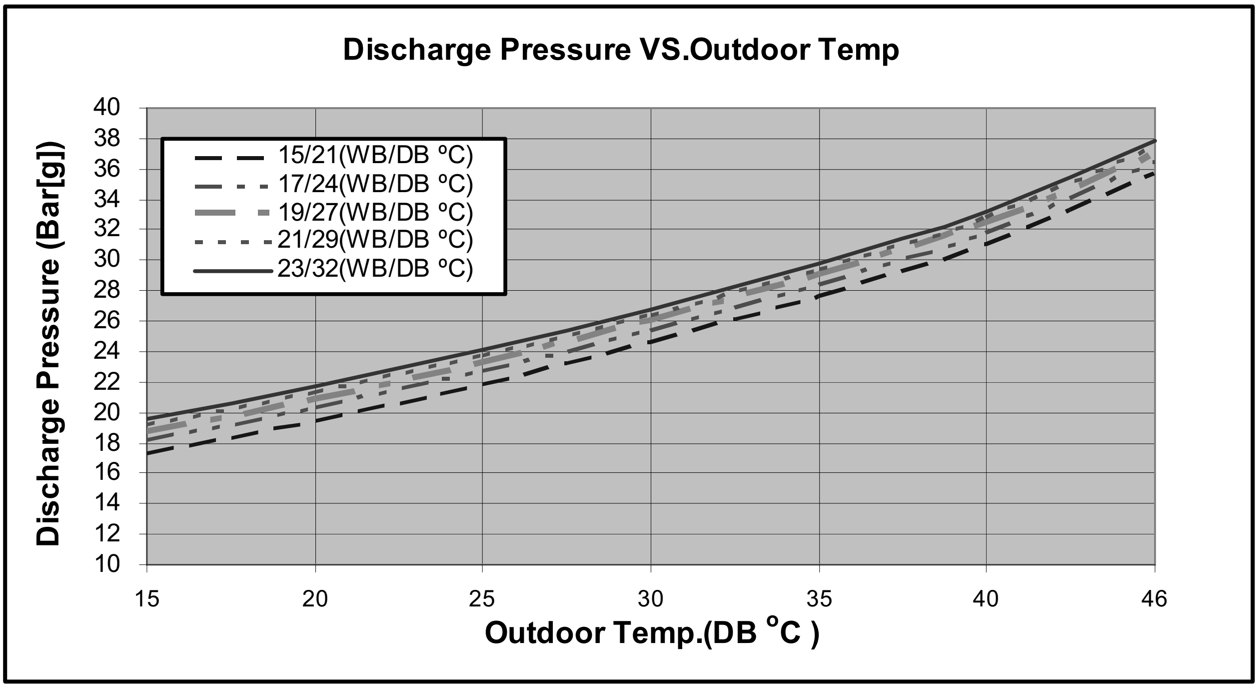
TH – Total Heating Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

5.12 Pressure Curves.

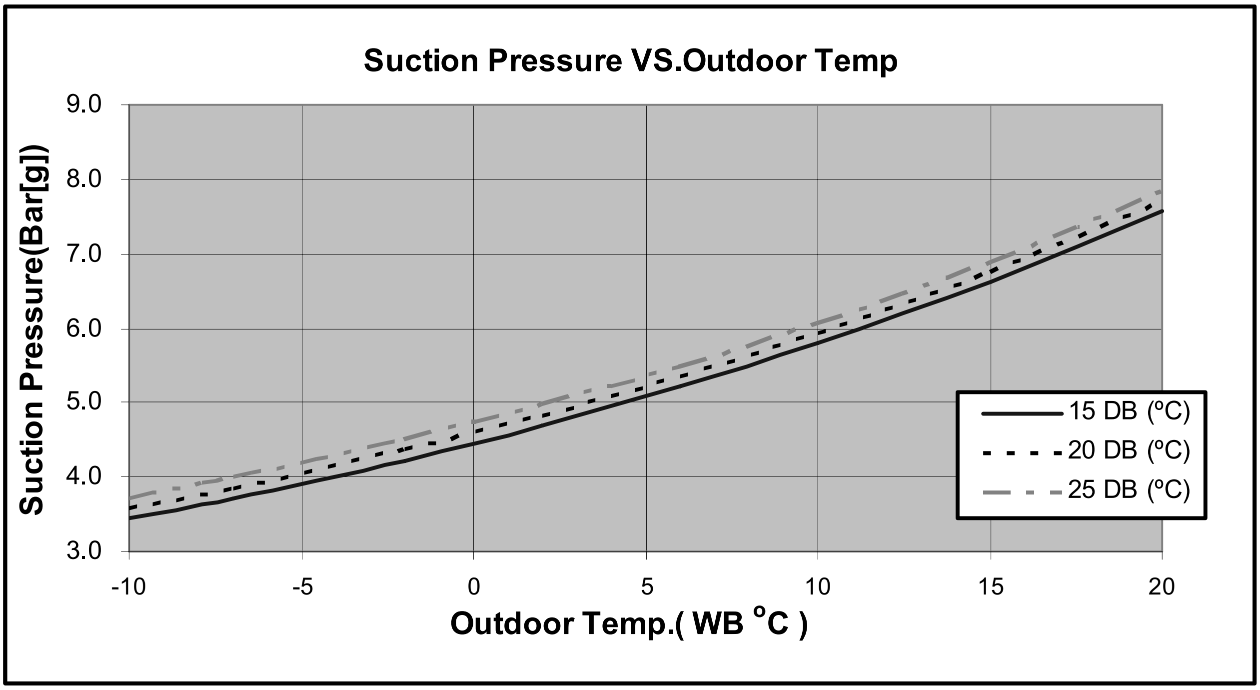
5.12.1 WNG 12

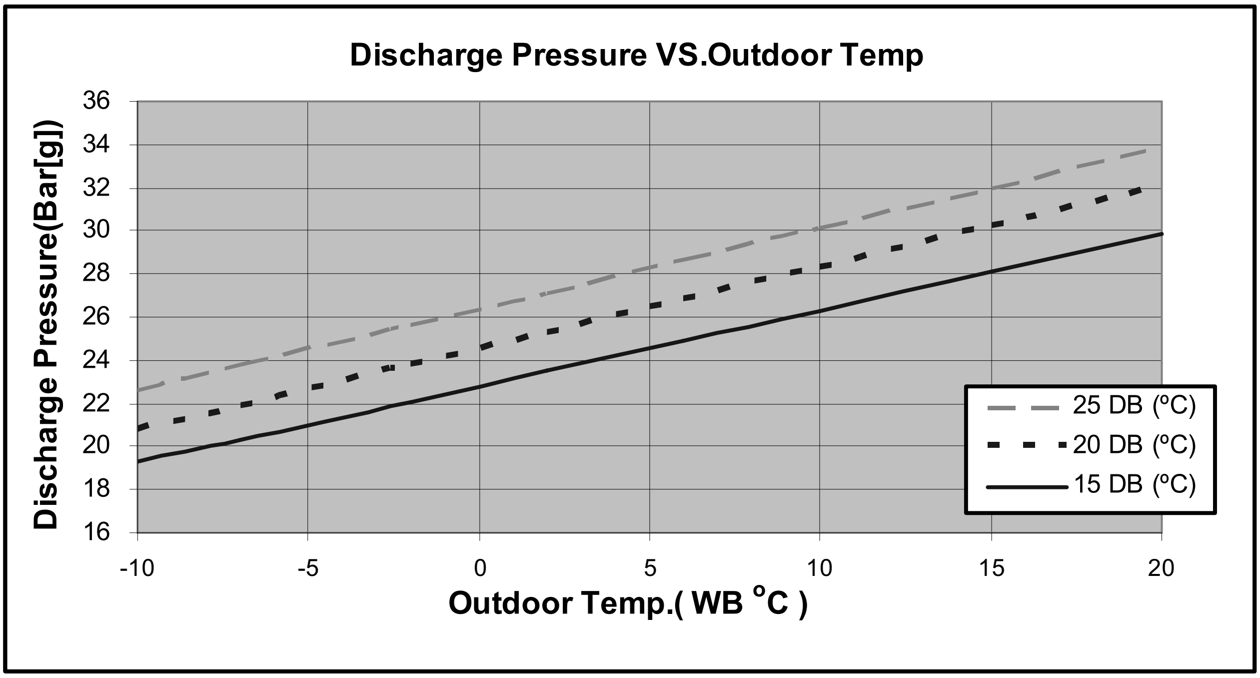
5.12.2 Cooling.





5.12.3 Heating.





CONTENT

5.13 Capacity Correction Factor Due to Tubing Length

5.13.1 DUO (9+9),(9+12)

5.13.2 Cooling

TOTAL TUBING LENGTH								
3m	**7.5m**	10m	15m	20m	25m	30m	40m	50m
1.02	**1**	0.99	0.96	---	---	---	---	---

* Minimum recommended tubing length between indoor and outdoor units is 3m.

5.13.3 Heating

TOTAL TUBING LENGTH								
3m	**7.5m**	10m	15m	20m	25m	30m	40m	50m
1.02	**1**	0.92	0.85	---	---	---	---	---

* Minimum recommended tubing length between indoor and outdoor units is 3m.

6. SOUND LEVEL CHARACTERISTICS

6.1 Outdoor Units

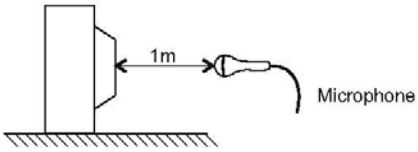
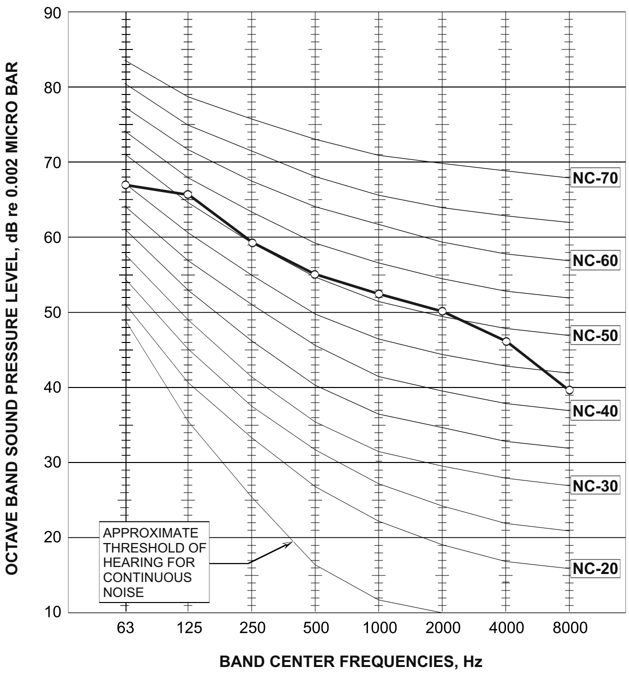


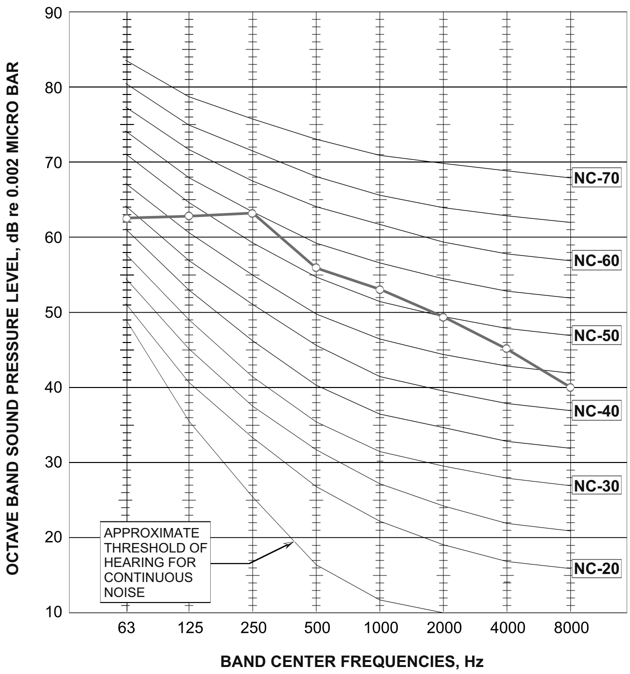
Fig.1
Microphone Distance from Unit

6.2 Sound Pressure Level Spectrum (Measured as Figure 1)

OU7- 0909, 0912, 1212 RC/ST Cooling



OU7-0909, 0912, 1212 RC/ST Heating



7. ELECTRICAL DATA

7.1 DUO (9+9)

Power Supply	1 PH, 220-240 VAC, 50Hz
Connected to	Outdoor
Starting Current - 9+9	18.7/18.7 A
Circuit breaker	16 A
Power supply wiring - No. x cross section	3 X 2.5 mm^2
Interconnecting cable - No. x cross section	6 X 1.5 mm^2

7.2 DUO (9+12)

Power Supply	1 PH, 220-240 VAC, 50Hz
Connected to	Outdoor
Starting Current - 9+12	18.7/24.0 A
Circuit breaker	16 A
Power supply wiring - No. x cross section	3 X 2.5 mm^2
Interconnecting cable - No. x cross section	6 X 1.5 mm^2

7.3 DUO (12+12)

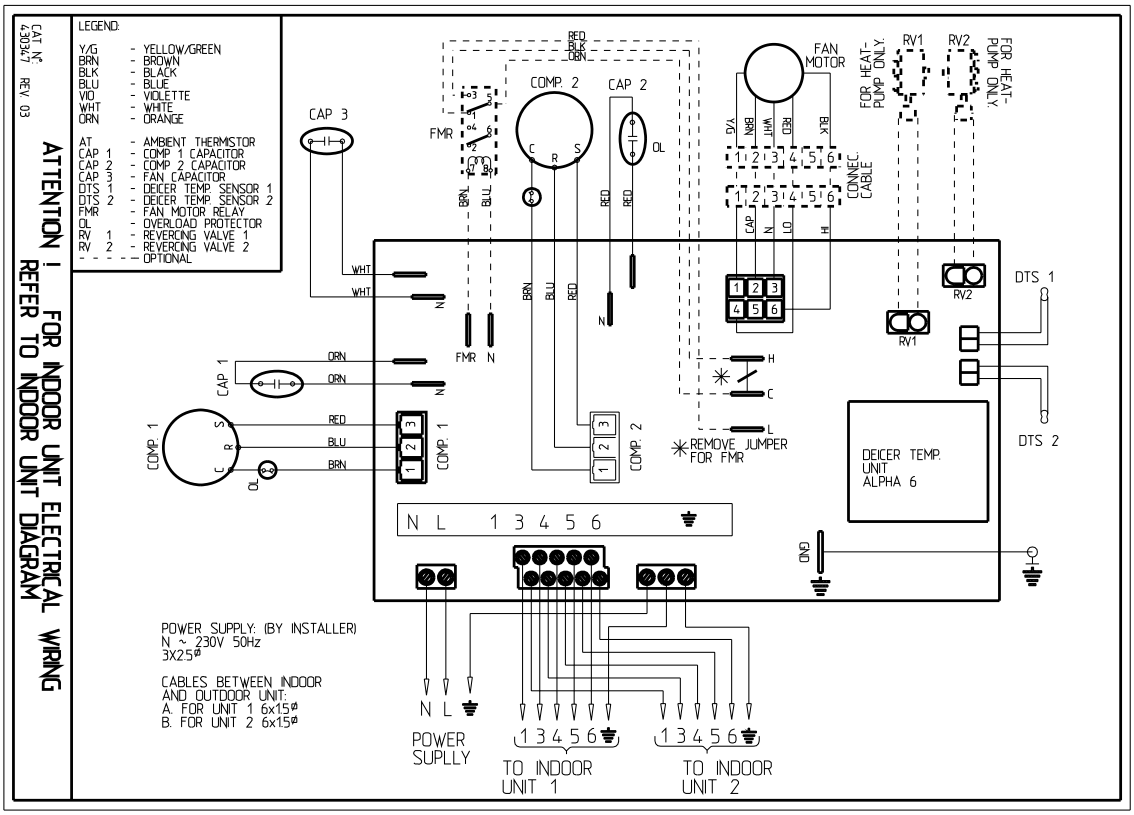
Power Supply	1 PH, 220-240 VAC, 50Hz
Connected to	Outdoor
Starting Current - 12+12	24/24 A
Circuit breaker	16 A
Power supply wiring - No. x cross section	3 X 2.5 mm^2
Interconnecting cable - No. x cross section	6 X 1.5 mm^2

NOTE

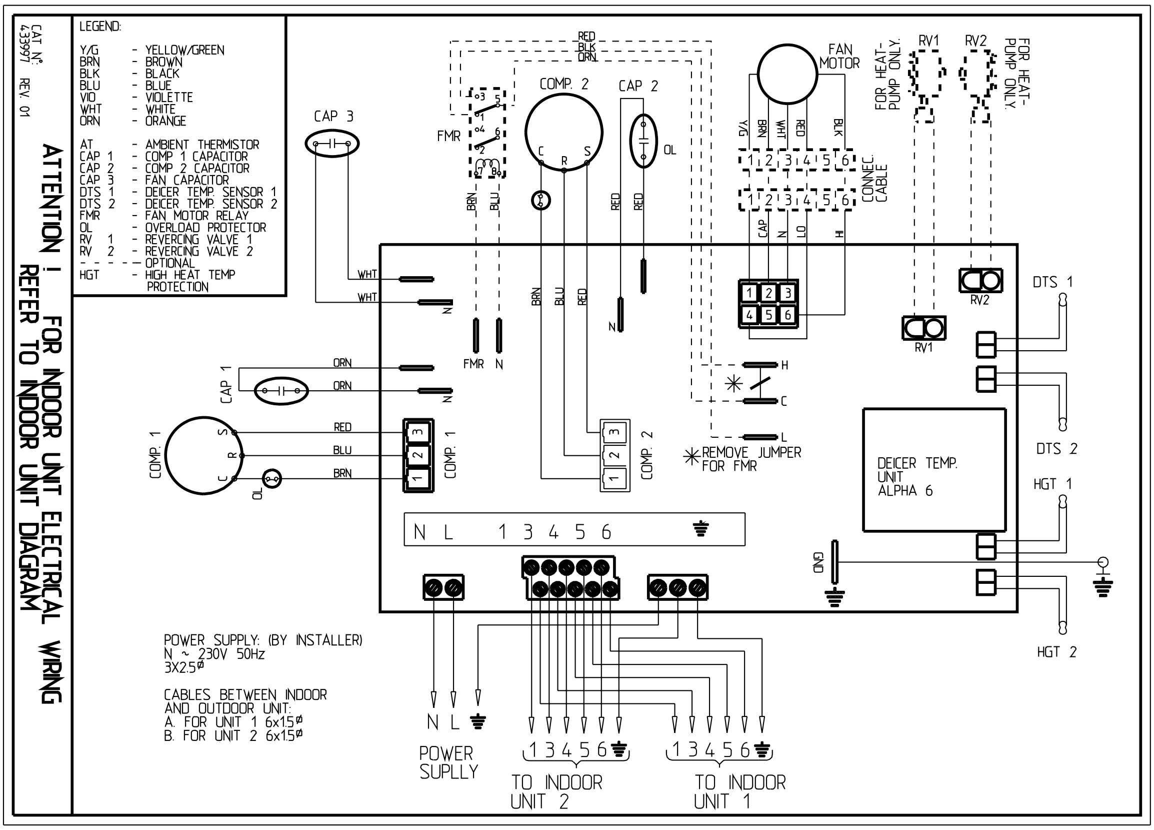
Power wiring cord should comply with local laws and electrical regulations requirements.

8. WIRING DIAGRAMS

8.1 DUO (9+9), (9+12)

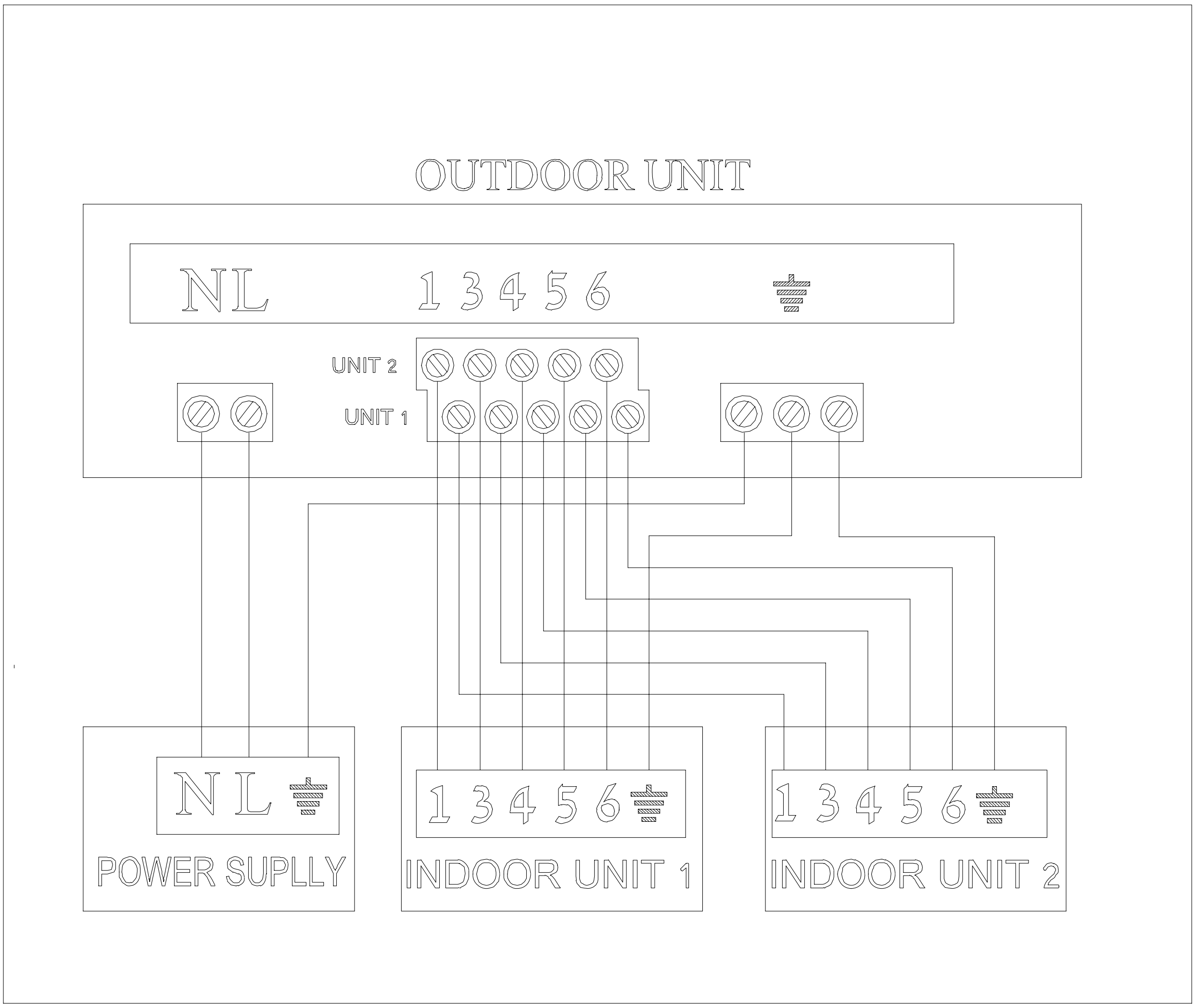


8.2 DUO (12+12)



9. ELECTRICAL CONNECTIONS

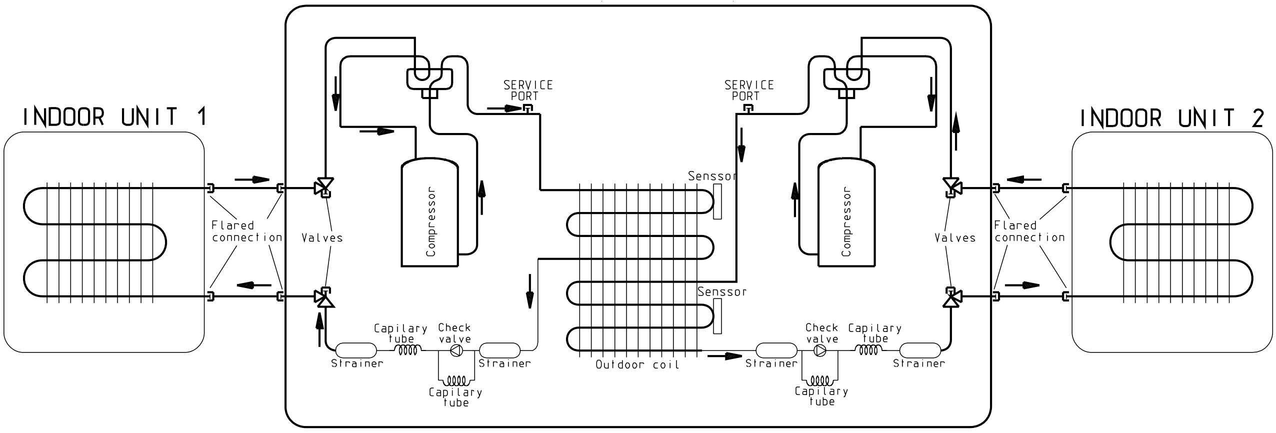
9.1 DUO (9+9), (9+12), (12+12)



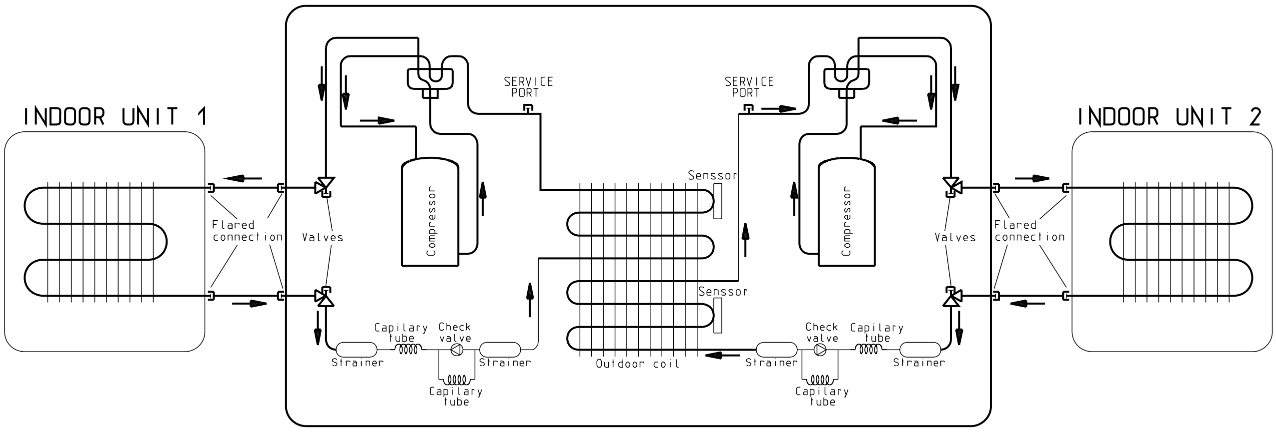
10. REFRIGERATION DIAGRAMS

10.1 DUO (9+9), (9+12), (12+12)

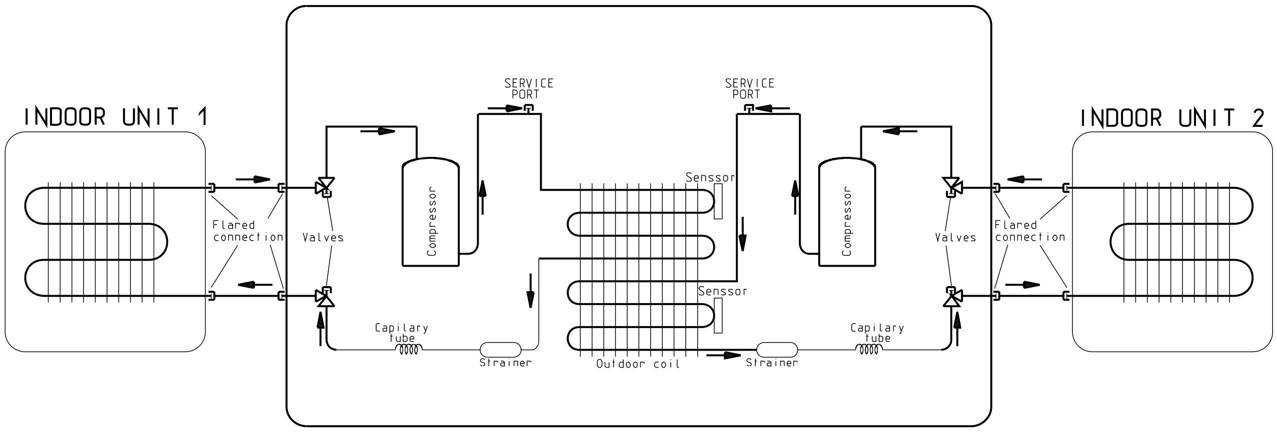
10.1.1 Cooling Mode



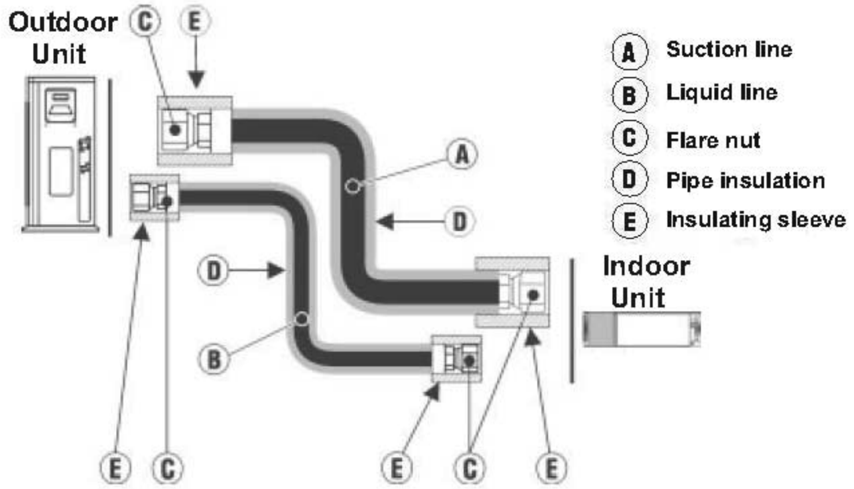
10.1.2 Heating Mode

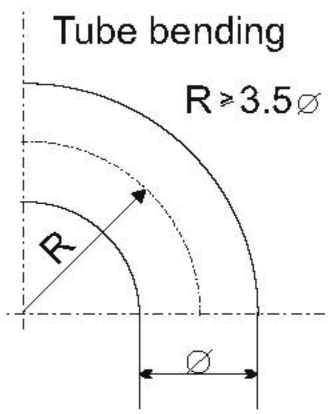


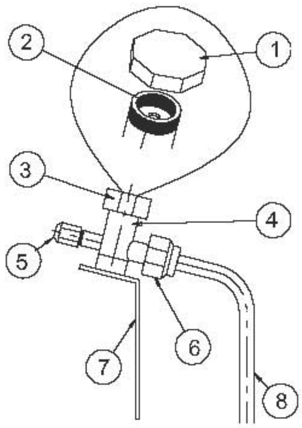
10.1.3 Cooling Only



11. TUBING CONNECTIONS



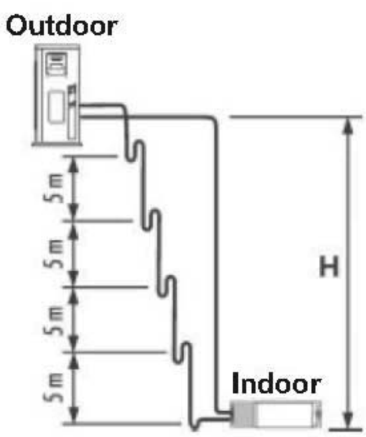




TUBE (Inch) / TORQUE (Nm)	1/4"	3/8"	1/2"	5/8"	3/4"
Flare Nuts	11-13	40-45	60-65	70-75	80-85
Valve Cap	13-20	13-20	18-25	18-25	40-50
Service Port Cap	11-13	11-13	11-13	11-13	11-13

1. Valve Protection Cap-end
2. Refrigerant Valve Port (use Allen wrench to open/close)
3. Valve Protection Cap
4. Refrigerant Valve
5. Service Port Cap
6. Flare Nut
7. Unit Back Side
8. Copper Tube

When the outdoor unit is installed above the indoor unit an oil trap is required every 5m along the suction line at the lowest point of the riser. Incase the indoor unit is installed above the outdoor, no trap is required.



12. CONTROL SYSTEM

12.1 General

The control and logic system is managed by the indoor PCB controller with regards to all functions and protections excluding Deicing. The DUO OU7 R410A is equipped with stand -alone internal deicer integrated on the outdoor PCB (TYPHOON - 4A 6.3).

12.1.1 Deicing operation:

The outdoor coil temp ‘ is detected by 2 OCT sensors (outdoor coil temp’) the deicing procedure will be activated if one of the sensors is sensing a temp’ ≤ -6ºC, and will stop when the outdoor coil will reach to12ºC or max 10 Min. once the deicing protection is activated it will include both units at the same time. Method of defrosting is by reversing the heat pump cycle to cooling mode, stopping the outdoor fan and keeping the comp’ running, the unit will resume to its normal operation after the deicing procedure will be deactivated. Min. deicing time is 2.5 Min.

12.1.2 Deicing interval:

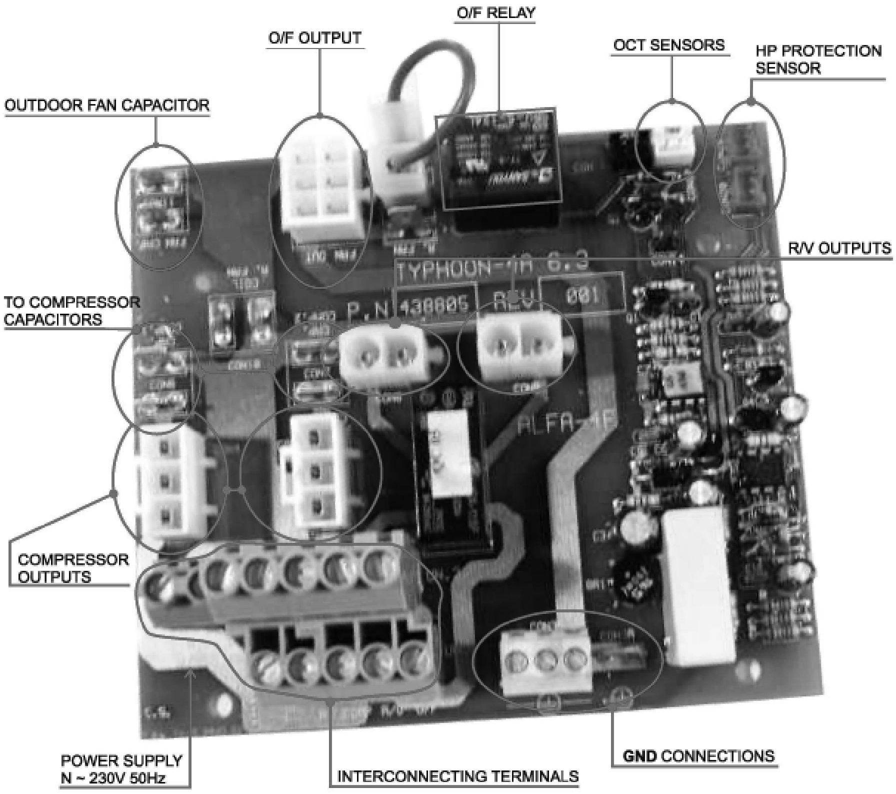
At first start up deicing will not be activated for the first 45 Min., and will go to STBY mode after every defrosting this timer will start a new cycle.

12.1.3 Discharge Pressure Protection – (Heating Mode)

The PCB is equipped with two additional sensors for each refrigerant circuit, measuring the refrigerant hot gas Temp’ in heating mode.
In case of a high discharge Temp’ in one of the sensors will be detected. The PCB will set the outdoor fan to ON and OFF intervals, in order to reduce the suction pressure
And as a result, the hot gas temp’ as well.

OFAN ON - 70 ºC
OFAN OFF - 75 ºC

12.1.4 TYPHOON - 4A 6.3



NOTE :

For further information please refer to the relevant indoor unit service manual.

13. TROUBLESHOOTING

ELECTRICAL & CONTROL TROUBLESHOOTING

ATTENTION : check for broken or loose cable lugs first.

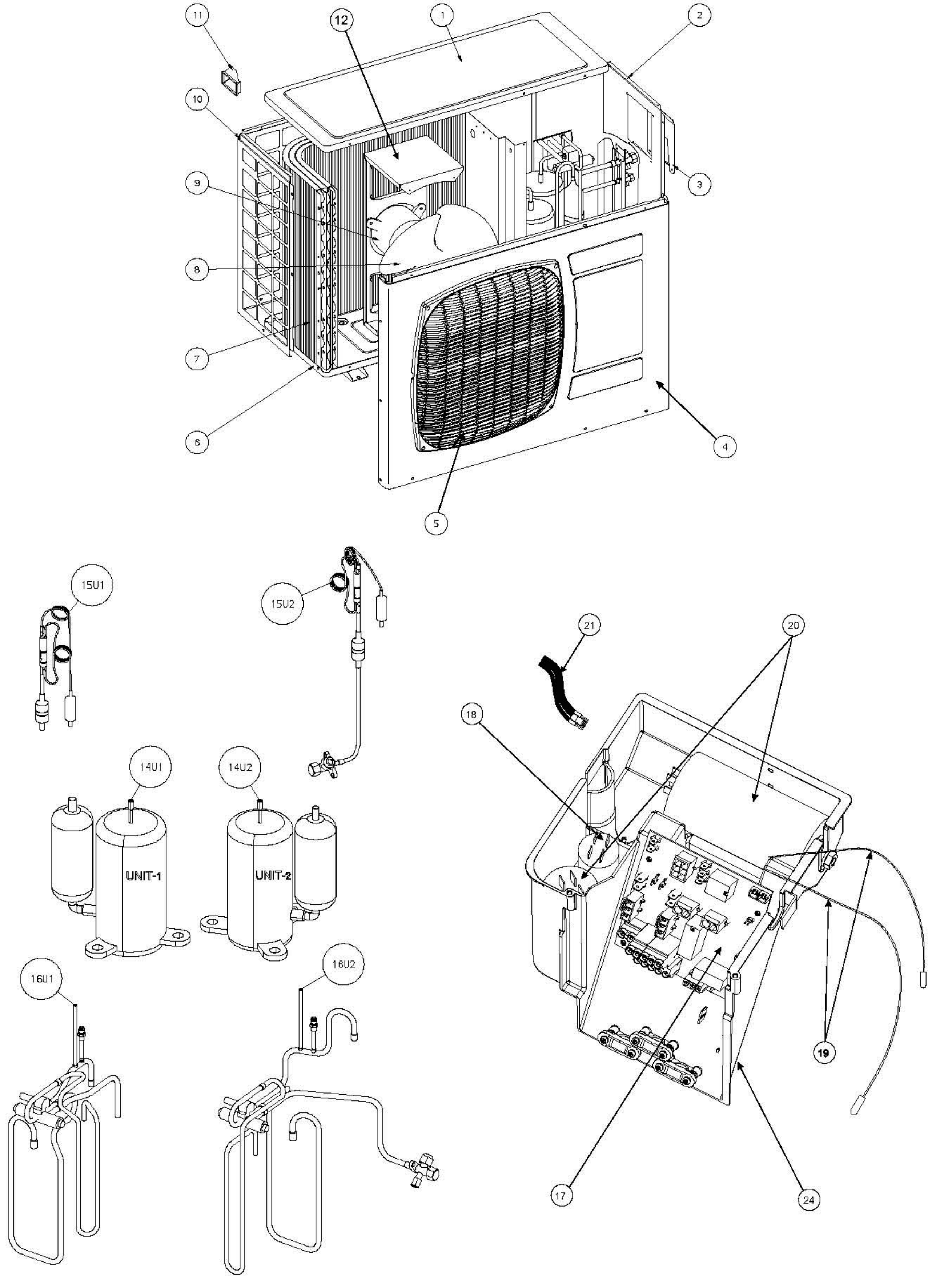
NO	SYMPTON	PROBABLE CAUSE	CORRECTIVE ACTION
1.	The power supply indicator (red led) doesn't light up.	There is no correct voltage between the line and neutral terminals on main P.C.B.	-If the voltage is low repair power supply. -If there is no voltage repair general wiring. -If there is correct voltage replace main or display P.C.B'S
2.	The operating indicator (green led) does not light up.	The remote control batteries are discharged	-Replace batteries of the remote control
3.	The operating indicator (green led) does not light up when starting from unit..	Check main P.C.B and display P.C.B.	-Replace P.C.B if necessary.
4.	The indoor fan does not function correctly.	Check the voltage between indoor fan terminals on the main P.C.B	- If there is voltage replace capacitor or motor.
5.	The outdoor fan does not function correctly.	Check the voltage between indoor fan terminals on the main P.C.B. There is voltage between outdoor fan terminals on the outdoor unit. There is no voltage between outdoor fan terminals on the outdoor unit.	- If there is no voltage replace main P.C.B - Replace capacitor or motor. - Check and repair electrical wiring between indoor and outdoor units.
6.	The compressor does not start up.	Check voltage on compressor terminals on the outdoor unit. (with ampmeter) Check if there is correct voltage between compressor terminals on the outdoor unit.	-If no voltage replace main P.C.B. - If low voltage repair power supply. -If the voltage corrrect replace capacitor or compressor. -If there is no voltage repair electrical wiring between indoor and outdoor units.
7.	The refrigeration system does not function correctly.	Check for leaks or restrictions, with ampmeter, pressure guage or surface thermometer.	- Repair refrigeration system and charge refrigerant if necessary.
8.	No cooling or heating only indoor fan works.	Outdoor fan motor faulty or other fault caused, compresssor overload protection cut out.	-Replace P.C.B. - Outdoor fan blocked remove obstructions.

ATTENTION : check for broken or loose cable lugs first

NO	SYMPTON	PROBABLE CAUSE	CORRECTIVE ACTION
9.	Only indoor fan and compressor working.	Outdoor fan blocked.	- Remove obstructions.
10.	Only indoor fan working.	-Run capacitor of outdoor fan motor faulty. -Windings of outdoor fan are shorted.	- Replace capacitor. -Replace motor.
11.	No cooling or heating takes place, indoor and outdoor fans working.	- Overload safety device on compressor is cut out (low voltage or high temperature) - Compressor run capacitor faulty. - Compressor windings are shorted.	- Check for proper voltage, switch off power and try again after one hour. - Replace compressor capacitor. - Replace compressor.
12.	No air supply at indoor unit, compressor operates.	-Indoor fan motor is blocked or turns slowly. -indoor fan run capacitor faulty. - motor windings are shorted.	- Check voltage,repair wiring if necessary. -Check fan wheel if it is tight enough on motor shaft,tighten if necessary. -Replace indoor fan motor.
13.	Partial, limited air supply at indoor indoor unit.	Lack of refrigerant (will accompanied by whisteling noise) cause ice formation on indoor unit coil in cooling mode.	-Charge the unit after localizing leak.
14.	Water accumulates and overflow from indoor unit section.	Drain tube or spout of drain pan clogged.	-Disasemble plastic drain tube from spout of indoor unit drain pan.
15.	Water dripping from outdoor unit base. (in heating mode)	Water drain outlet is clogged.	-Open outdoor unit cover clean out water outlet ,clean the base inside througly.
16.	Freeze-up of outdoor coil in heating mode, poor heating effect in room, indoor fan operates.	-Faulty outdoor thermistor. -Faulty control cable. -Outdoor unit air outlet is blocked.	-Replace thermistor. -Repair control cable. -Remove obstructions.

14. EXPLODED VIEWS AND SPARE PARTS LISTS

14.1 Outdoor Unit: OU7 (9+9), (9+12), (12+12) RC



CONTENT

14.2 Outdoor Unit: OU7- 0909 RC

Item Code	Item Description	Quantity	Drawing Number
437045	UPPER COVER EL13 OU LARGE	1	1
433280	SIDE PANEL OU7-24 R410A	1	2
436357	SMALL ELECTRICAL COVER OU	1	3
439329	FRONT COVER/CO' OU7-35/90 EL13	1	4
437091	OU SQUARE FAN GUARD	1	5
439163	BASE ASSY OU DUO	1	6
433883	COIL OU7-99 GR/HDR R410A	1	7
4529604	AXIAL FAN D493*143	1	8
434062	MOTOR 86W,2S,OU7-24	1	9
433281	SIDE GUARD OU7-24 R410	1	10
436358	OU LEADING HANDLE	1	11
439342	MOTOR SUPPORT OU7	1	12
431112	COMPRESSOR GK113PAL	2	14U2
433888	CAPILLARY ASSY OU7-9*9/12 RC	1	15U1
433889	CAPILLARY ASSY UNIT1 OU7-99 RC	1	15U2
433886	TUBING ASSY UNIT 1OU7-99 RC R4	1	16U1
433885	TUBING ASSY UNIT 2 OU7-9*9/12	1	16U2
402566	BOARD TPHN 4A6.2	1	17
442007	CAPACITOR 6mF 400V P1/P2	1	18
434716	THERMISTOR+CAP WTH CONNECTOR L	2	19
442012	CAPACITOR 30mF 400V P1/P2	2	20
435968	COMPRESSOR WIRING OU DUO	2	21
437229	ELECTRICAL BOX TPHN	1	24
442466	VALVE COIL L700 MOLEX-SANHUA	2	33

14.3 Outdoor Unit: OU7- 0912 RC

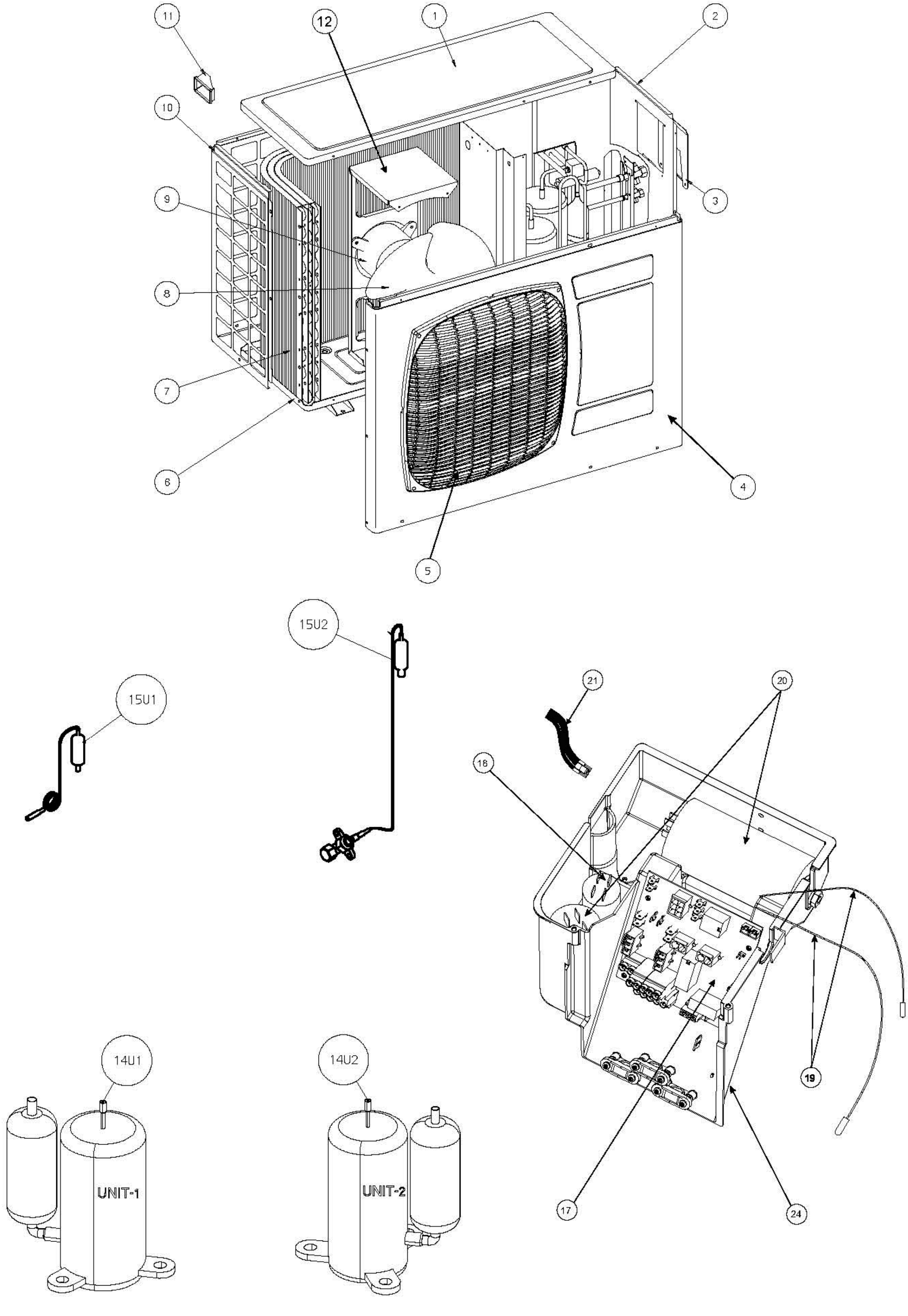
Item Code	Item Description	Quantity	Drawing Number
437045	UPPER COVER EL13 OU LARGE	1	1
433280	SIDE PANEL OU7-24 R410A	1	2
436357	SMALL ELECTRICAL COVER OU	1	3
439329	FRONT COVER/CO' OU7-35/90 EL13	1	4
437091	OU SQUARE FAN GUARD	1	5
439163	BASE ASSY OU DUO	1	6
433884	COIL OU7-912 GR/HDR R410A	1	7
4529604	AXIAL FAN D493*143	1	8
434062	MOTOR 86W,2S,OU7-24	1	9
433281	SIDE GUARD OU7-24 R410	1	10
436358	OU LEADING HANDLE	1	11
439342	MOTOR SUPPORT OU7	1	12
431111	COMPRESSOR GK151PAG	1	14U1
431112R	COPMPRESSOR GK113	1	14U2
433888	CAPILLARY ASSY OU7-9*9/12 RC	1	15U1
433890	CAPILLARY ASSY UNIT1 OU7-912	1	15U1
433886	TUBING ASSY UNIT 1OU7-99 RC R4	1	16U1
433885	TUBING ASSY UNIT 2 OU7-9*9/12	1	16U2
402566	BOARD TPHN 4A6.2	1	17
442007	CAPACITOR 6mF 400V P1/P2	1	18
434716	THERMISTOR+CAP WTH CONNECTOR L	2	19
442012	CAPACITOR 30mF 400V P1/P2	1	20
442013	CAPACITOR 35mF 400V P1/P2	1	20
435968	COMPRESSOR WIRING OU DUO	2	21
437229	ELECTRICAL BOX TPHN	1	24
442466	VALVE COIL L700 MOLEX-SANHUA	2	33

CONTENT

14.4 Outdoor Unit: OU7-1212 RC

Item Code	Description	Quantity	Drawing Number
402566	UPPER COVER EL13 OU LARGE	1	1
431111	SIDE PANEL OU7-24 R410A	1	2
433280	SMALL ELECTRICAL COVER OU	1	3
433281	FRONT COVER/CO' OU7-35/90 EL13	1	4
433752	OU SQUARE FAN GUARD	1	5
433885	NEW BASE ASSY OU DUO 2005 EXPO	1	6
433886	COIL OU7-12*12 GR/HDR R410A	1	7
433985	AXIAL FAN D493*143	1	8
433988	MOTOR 70W,2S,OU7	1	9
433989	SIDE GUARD OU7-24 R410	1	10
434211	OU LEADING HANDLE	1	11
434716	MOTOR SUPPORT OU7	1	12
434717	BOARD TPHN 4A6.2	1	17
436357	CAPACITOR 6mF 400V P1/P2	1	18
436358	THERMISTOR+CAP WHT CONNECTOR L	1	19
437045	THERMISTOR WTH CAP L750	1	19
437091	CAPACITOR 35mF 400V P1/P2	2	20
437229	COMPRESSOR WIRING OU10-1PH MIT	2	21
437279	ELECTRICAL BOX TPHN	1	24
438079	VALVE COIL L700 MOLEX-SANHUA	2	33
439329	COMPRESSOR GK151PAG	2	14U1
439342	CAPILLARY ASSY UNIT1 OU7-1212	1	15U1
442007	CAPILLARY ASSY UNIT2 OU7-1212	1	15U2
442013	TUBING ASSY UNIT1 OU7-99 RC R4	1	16U1
442466	TUBING ASSY UNIT 2 OU7-9*9/12	1	16U2
4529604	THERMISTOR+CAP WTH CONNECTOR L	1	19a

14.5 Outdoor Unit: OU7(9+9), (9+12), (12+12) ST



CONTENT

14.6 Outdoor Unit: OU7- 0909 ST

Item Code	Item Description	Quantity	Drawing Number
437045	UPPER COVER EL13 OU LARGE	1	1
433280	SIDE PANEL OU7-24 R410A	1	2
436357	SMALL ELECTRICAL COVER OU	1	3
439329	FRONT COVER/CO' OU7-35/90 EL	1	4
437091	OU SQUARE FAN GUARD	1	5
439163	BASE ASSY OU DUO	1	6
433838	COIL OU7-99 ST GR R410A	1	7
4529604	AXIAL FAN D493*143	1	8
434062	MOTOR 86W,2S,OU7-24	1	9
433281	SIDE GUARD OU7-24 R410	1	10
436358	OU LEADING HANDLE	1	11
439342	MOTOR SUPPORT OU7	1	12
431112	COMPRESSOR GK113PAL	2	14U2
433940	CAPILLARY ASSY UNIT1 OU7-99	1	15U1
433941	CAPILLARY ASSY UNIT 2 OU7-9	1	15U2
402566	BOARD TPHN 4A6.2	1	17
442007	CAPACITOR 6mF 400V P1/P2	1	18
442012	CAPACITOR 30mF 400V P1/P2	2	20
435968	COMPRESSOR WIRING OU DUO	2	21
437229	ELECTRICAL BOX TPHN	1	24

14.7 Outdoor Unit: OU7- 0912 ST

Item Code	Item Description	Quantity	Drawing Number
437045	UPPER COVER EL13 OU LARGE	1	1
433280	SIDE PANEL OU7-24 R410A	1	2
436357	SMALL ELECTRICAL COVER OU	1	3
439329	FRONT COVER/CO' OU7-35/90 EL	1	4
437091	OU SQUARE FAN GUARD	1	5
439163	BASE ASSY OU DUO	1	6
433839	COIL OU7-912 ST GR R410A	1	7
4529604	AXIAL FAN D493*143	1	8
434062	MOTOR 86W,2S,OU7-24	1	9
433281	SIDE GUARD OU7-24 R410	1	10
436358	OU LEADING HANDLE	1	11
439342	MOTOR SUPPORT OU7	1	12
431111	COMPRESSOR GK151PAG	1	14U1
431112	COMPRESSOR GK113PAL	1	14U2
433939	CAPILLARY ASSY OU7-912 ST R	1	15U1
433941	CAPILLARY ASSY UNIT 2 OU7-9	1	15U2
402566	BOARD TPHN 4A6.2	1	17
442007	CAPACITOR 6mF 400V P1/P2	1	18
442012	CAPACITOR 30mF 400V P1/P2	1	20
442013	CAPACITOR 35mF 400V P1/P2	1	20
435968	COMPRESSOR WIRING OU DUO	2	21
437229	ELECTRICAL BOX TPHN	1	24

14.8 Outdoor Unit: OU7- 1212 ST

WILL BE RELEASED SHORTLY

APPENDIX A

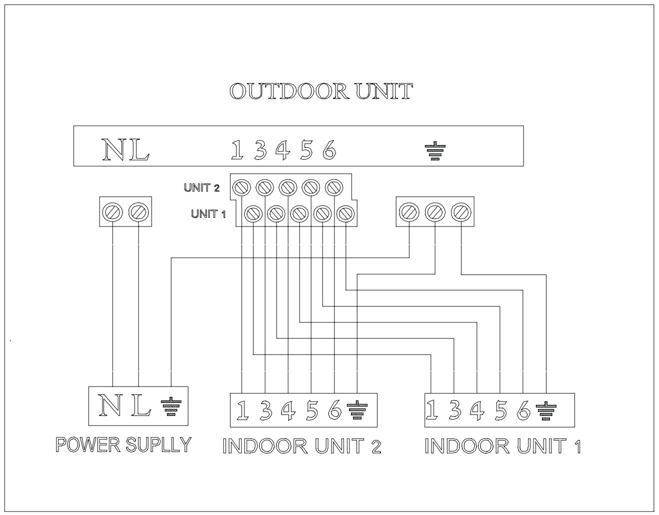
INSTALLATION AND OPERATION MANUAL

- ► INSTALLATION INSTRUCTION
- ► ADDITIONAL PAGE FOR MULTI SPLIT UNITS INSTALLATION

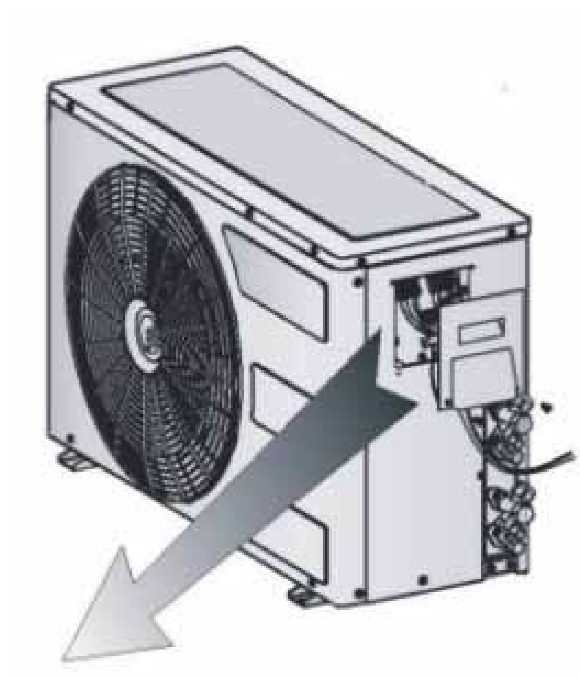
ADDITIONAL PAGE FOR MULTI SPLIT UNITS INSTALLATION

Detail information is in installation manual of indoor unit
the following content is special requirement of duo outdoor unit.

1. Wiring Diagram



2. Outdoor unit



3. Electrical connections between Outdoor unit and two indoor units

1. To connect the indoor unit with the outdoor unit use the following electrical cables
   Multiple wire cable: 6 wires x 1.5mm²
2. at outdoor unit side:
   a. Wire connector of the outdoor unit to the multiple wire power cables and insert into the terminal end connector in the outdoor unit.
   b. Connect the yellow/green ground wire power cables with the cable clamp
   c. Secure multiple wire power cable with the cable clamps

Attention!
1. For multi-split units, remove power supply cord from indoor unit.
Connect main supply to outdoor unit only!
2. Do not remove resistors which are connected to points 8 9 from indoor.

CONTENT